

INFORMATION TECHNOLOGY (IT) STRATEGIC ALIGNMENT: A
CORRELATIONAL STUDY BETWEEN THE IMPACT OF IT GOVERNANCE
STRUCTURES AND IT STRATEGIC ALIGNMENT

by

Keith K. Asante

STEVEN BROWN, Ph.D., Faculty Mentor and Chair

CALVIN LATHAN, Ph.D., Committee Member

ERIC WELLINGTON, Ph.D., Committee Member

Raja K. Iyer, Ph.D., Dean, School of Business & Technology

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Abstract

This dissertation explored the extent to which Information Technology (IT) strategic alignment are impacted by IT governance structures. The study discusses several strategic alignment and IT governance literature that presents a gap in the literature domain. Subsequent studies researched issues surrounding why organizations are not able to align business and IT using previous models. Successive research took the form of case studies and observations that lacked testing of actual theories. The purpose of this study was to explore the extent to which IT strategic alignment is affected by IT governance structures. This literature review evaluates common strategic alignment themes, limitations, methodologies, results and addressed a gap in literature by exploring decision making through organizational IT governance structures that add knowledge to the literature domain of IT strategic alignment and IT governance. The study adapted a non-experimental, correlative quantitative research used to determine the extent to which causal relationships exist for exploring four research questions. The studies population sample came from 4000 business and technology managers and executives of which 300 responded within the response timeframe. The study tested several hypothesis that yielded positive and negative correlations. The study concludes on the statistical correlation between IT strategic alignment and IT governance structural factors affecting organizational goals, objectives and competitive advantage.

Dedication

To my wife Tatyana, my daughters Emma and Mariah. Without their patience and support, this would not have been possible. They are my rock and ultimate joy.

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CHAPTER 1. INTRODUCTION

Introduction to the Problem

Organizations today depend more on Information Technology (IT) to support business goals and objectives for the purposes of organizational effectiveness, achieving competitive advantage and continual growth (Luftman, 2003). While the importance of IT strategic alignment is discussed in the extant literature, researchers continue to report on the failures of achieving IT strategic alignment in organizations (Luftman & Kempaiah, 2007). Furthermore, the lack of IT strategic alignment in organizations lead to pure IT Return on Investment (ROI), inefficient operations due to pure performance (Luftman & Kempaiah, 2007; Sabberwal & Chan, 2001) that impact the organizations competitive advantage (Luftman, Lewis & Oldach, 1993; Keen, 1993; Smaczny, 2001). Luftman & Brier (1999) adds that a successful IT alignment has the capability to transform an organization and an industry and is a "fundamental principle that has been advocated for over a decade" (p. 110). Congruent to this assertion, Paterson (2004) identifies IT governance as the framework to guide organizations IT strategic alignment process.

IT governance has become prevalent as organizational executives design or selects an IT governance structure to direct IT in sustaining business goals and objectives (ITGI, 2003; Van Grembergen, De Haes & Guldentops, 2004). However, the choice of a governance model or structure does not imply that the organization has effectively implemented a governance structure that enables and aligns its IT and sustains the

organization. It is important that organizational leaders and board of directors understand the relationship and impact of IT governance structure to IT strategic alignment. The added knowledge may lie in the degree to which IT governance impacts IT alignment.

According to Information Technology Governance Institute (ITGI) (2003), IT governance ensures that IT goals are met and IT risks are mitigated such that IT delivers value to sustain and grow the business. The institute adds that “IT governance drives strategic alignment between IT and the business and must judiciously measure performance” (p. 37). However, there is a gap in literature that describes the extent to which IT governance structures influence or impacts organizational IT strategic alignment (Peterson, 2004).

The research explores the correlation between IT Governance structures in organizations and IT strategic alignment in an effort to extend existing knowledge of IT strategic alignment and its relationship to IT governance. Furthermore, organizations that choose to combine IT governance structures continue to face difficulties as to the exact implementation strategy and combination of structural elements that is applicable (Peterson, 2004). Further investigation into IT strategic alignment and governance structural elements may contribute to existing knowledge as well as add practical know-how to managers and executives planning for IT alignment and governance in an effort to drive the organizations business with IT.

Background of the Study

IT strategic alignment relationship with IT governance structural elements may prove to be an effective strategic initiative by an organization. However, decades of IT

strategic alignment research and proposed models did not engage the impacts of IT governance structural elements to the alignment process (Korac-Kakabadse & Kakabadse, 2001). Korac-Kakabadse and Kakabadse add that IT governance requires greater attention if IT alignment is to be successful. Consistent with organizational challenges with regard to strategic alignment and IT governance, the relationship between IT alignment and IT governance continue to be an uncultivated area of study (De Haes & Guldentops, 2004; ITGI, 2003; Van Grembergen,). Organizational leaders are at a loss as to the degree to which an IT governance structure impacts, inhibits or enables a successful IT strategic alignment (Weill & Ross, 2005).

A background of the literature of strategic alignment provides a lens through prominent seminal and recent strategic alignment authors. Henderson and Venkatraman (1993) proposed the Strategic Alignment Model (SAM) formulated from four fundamental strategic choice domains. Henderson and Venkatraman research purpose was to create an IT strategic alignment model that would guide managers in their organizational strategic fit. Weill and Broadbent (1993) research was to identify organizational practices that inhibited or enabled the achievement of IT strategic alignment. The result of Weill and Broadbent study was a proposed strategic alignment model that summarized key practices that may give an organization a comparative advantage over its competitors.

Henderson and Venkatraman strategic choice domain model and Weill and Broadbent management implications and actions driven model in comparison, achieved different purposes. Weill and Broadbent (1993) model focused on customer driven IT alignment rather than IT that are product driven. Henderson and Venkatraman (1993) model on the other hand, centered on the application of an overall organizational strategic fit using

the strategic choice domains. With these limitations or diverse approaches to addressing IT strategic alignment, these authors' have been cited in several subsequent strategic alignment research such as Teo and King (1997), Segars and Grover (1999), Luftman and Brier (1999), Hirschheim and Sabherwal (2001) and Sabberwal & Chan (2001).

In a research to identify what difference management could make when all organizations had the same access to technology and information, Keen (1993) found that gaining competitive advantage through IT meant that management should integrate business processes with its IT and governance structure. However, the author stated a limitation to investigate impacts and influence of the governance structures. An evaluation of Keen's research and Weill and Broadbent depict some similarities with the research work of Luftman, Lewis and Oldach (1993) as all three groups of researchers sort to uncover organizational processes grounded in the theory of strategy as the phenomena that made IT strategic alignment possible.

While the authors discussed IT strategic alignment models for achieving alignment, Reich and Benbasat (1996) research efforts were to address the inconsistent application of alignment models and the misunderstanding of the link between business and IT. After conducting extensive interviews and collecting data from IS and business executives within 10 business units in three large Canadian life insurance companies, the authors found that "understanding of current objectives and shared vision for the utilization of information technology are proposed as the most promising potential measures for short and long-term aspects of the social dimension of linkage, respectively" (Reich & Benbasat, 1996, p. 55). Reich & Benbasat research was one of the first strategic alignment studies to go outside the traditional disciplines of strategy into the social dimensions of organizations.

While the importance of IT strategic alignment had been documented in literature and several strategic alignment models proposed, Luftman & Brier (1999) research problem was that after decades of strategic alignment research, organizations continue to face difficulty in achieving strategic alignment. These alignment issues caused Luftman (2003) to develop a model based on a modified Carnegie Mellon University's Capability Maturity Model (CMM) to address these issues. Luftman's model is one of the most current of IT strategic alignment models to date. The model addressed limitations found in previous strategic alignment models. However, Luftman maturity model did not factor into the research the IT strategic alignment relationship to IT governance structures and the degree of impact. Consequently, Peterson (2004), ITGI (2003), Avison, Gregor and Wilson (2006) and Wilbanks (2008) research reveals that an organizations IT governance structure serves as the enabling mechanism to enforce alignment execution. However, the authors did not address the relationship between the variables and degree of IT governance factors enabling the IT strategic alignment process.

Statement of the Problem

The problem is that despite over four decades of research in IT strategic alignment, there is lack of research that explores and investigates the relationship and structural impacts of IT Governance to IT strategic alignment (Avison, Gregor & Wilson, 2006; Korac-Kakabadse & Kakabadse, 2001; Peterson, 2004 and Wilbanks, 2008). Weill and Ross (2005) add that the effectiveness of an organization's IT to the business depends on IT alignment relationship to managements IT governance decisions.

This research adds knowledge and understanding of IT strategic alignment relationship with IT governance structural elements to the literature domain. Organizations continue to face IT strategic alignment difficulties (Luftman & Kempaiah, 2007; Peterson, 2004; Wilbanks, 2008). The extant literature discusses IT strategic alignment without investigating IT governance structural elements and their degree of impact or influence. Avison, Gregor and Wilson (2006) assert that there is a direct relationship between the failure of an IT strategic alignment and the failure of organizations goals. The authors denote that such failure may be due to the miss-implementation of IT Governance or the lack of governance. Exploring IT strategic alignment and IT governance relationships may provide the missing link to business leaders while understanding the dynamics to achieving and maintaining IT strategic alignment.

Purpose of the Study

The purpose of this quantitative correlational study is to explore the extent to which IT strategic alignment are impacted by IT governance structural elements based on an alignment maturity model and an IT governance framework (Luftman, 2003; Luftman & Kempaiah, 2007 and Peterson, 2004). This study focuses on IT strategic alignment relationship with IT governance. The second purpose was to determine the degree of impacts that may exist between the variables. The research explores selected U.S. industries made up of over 4000 business and IT executives and middle managers who are in the line of decision making regarding the organizations IT and governance structures to add knowledge to business leaders and researchers.

Rationale

While IT Governance has come to the forefront with the purpose of driving IT decisions in meeting business goals (Wilbanks, 2008), there is deficient knowledge in literature that addresses the extent to which an organizations IT governance structure impacts its IT strategic alignment. According to Peterson (2004), IT governance has emerged as the framework for accessing IT business value. Consistent with this theme, Hill and Snell (1988), Karake (1992), and Geiger and Taylor (2003) agreed that while there has been considerable investigation of organizational governance and its influence on Fortune 500 companies in the U.S., none of the research purpose and findings was the result of investigations on the relationship between IT strategic alignment and IT governance structures. Furthermore, there has been limited quantitative study on IT strategic alignment relationship with IT governance structural impacts (Weill & Ross, 2005). Therefore, this research seeks to obtain quantitative data on the impact of IT governance to IT strategic alignment.

IT governance is the support framework that guides the successful implementation of IT projects that serve as the mechanism for achieving goals and objectives such as reducing operational cost and gaining competitive advantage through policy and decision making (Wilbanks, 2008). The extant literature depicts the importance of IT governance to organizations. This research seeks to provide meaningful data on the impacts of IT governance structures on IT strategic alignment within select U.S. Industries that includes Government/Military, Healthcare/Medical, Manufacturing, Telecommunications, Computer Hardware/Software/Internet and Finance/banking/Insurance through an exploratory

approach. It is the hope of the researcher that business leaders and researchers in this research domain area may benefit from understanding the dynamics existent in the relationship between IT strategic alignment and IT governance.

Research Questions

Research Question 1:

Does a relationship exist between IT strategic alignment and IT governance?

H1₀: There is no correlation between IT strategic alignment and IT governance.

H1_a: There is a positive correlation between IT strategic alignment and IT governance.

Research Question 2:

To what extent is there a correlation between IT strategic alignment and Centralized IT governance structure?

H2₀: There is no correlation between IT strategic alignment and Centralized IT governance structure.

H2_a: There is a positive correlation between IT strategic alignment and Centralized IT governance structure.

Research Question 3:

To what extent is there a correlation between IT strategic alignment and Decentralized IT governance structure?

H3₀: There is no correlation between IT strategic alignment and Decentralized IT governance structure.

H3a: There is a positive correlation between IT strategic alignment and Decentralized IT governance structure.

Research Question 4:

To what extent is there a correlation between IT strategic alignment and Federal IT governance structure?

H4o: There is no correlation between IT strategic alignment and Federal IT governance structure.

H4a: There is a positive correlation between IT strategic alignment and Federal IT governance structure.

Significance of the Study

The significance of the study is to add knowledge to the literature domain of IT strategic alignment by testing hypothesis on the statistical correlation between IT strategic alignment and IT Governance. Additionally, the analysis of findings sort presents a conceptual framework that unifies IT strategic alignment and IT governance. Discussions on the degree of IT governance impact on IT strategic alignment and relationships may guide business executives and extends the cumulative research of strategic alignment.

Furthermore, the results may enable executives within the U.S. industries and beyond to use the discussions and findings to facilitate business goals and objectives. The conclusion of the study yields the discovery of IT strategic alignment and IT governance relationships impacts relevant to today's 21st century organizations.

Definition of Terms

This research references literature focused in specialized knowledge domain that requires understanding of precise words, phrases or terms used frequently throughout this dissertation. Goldman (1986) writes that words or phrases within research require contextual definition of terms for the purpose of contextual clarity.

IT Governance

Sambamurthy & Zmud (1999) describes IT governance as a measure of organizational authority for IT activities. Peterson (2004) adds that "IT governance describes the distribution of IT decision-making rights and responsibilities among different stakeholders in the enterprise, and defines the procedures and mechanisms for making and monitoring strategic IT decisions" (Peterson, 2004, p. 7). In other words, IT governance is the mechanism to ensure that organizational strategic processes in place sustains and extends the organizations goals and objectives. Organizations choose from three IT governance structures of Centralized, Decentralized or Federal IT governance structures (Weill & Ross, 2005). According to Luftman (2003), the IT governance structural choice an organization makes affects the IT strategic alignment process.

Centralized IT Governance Structure

A Centralized IT governance structure is a process whereby a designated corporate IT unit has complete and primary decision making authority for IT architecture, standards, and application resource for the entire organization (Luthman, 2003).

Decentralized IT Governance Structure

A Decentralized IT governance structure is a process whereby each functional unit within the organization has assume decision making authority for their IT infrastructure, standards, and application resource (Paterson, 2004).

Federal IT Governance Structure

A Federated IT governance structure is a process where corporate IT department as a central unit has decision making authority and responsibility over corporate IT architecture, common systems, and standards decisions, while each functional unit has decision making authority and responsibility for application resource and flexibility of a tailored implementation for that specific unit (Luthman, 2003). In other words, the Federal structure is a combination of the Centralized and Decentralized.

Strategy

Thompson, Strickland and Gamble (2007) describe strategy as the planned actions that management takes to attract, keep and please customers in an effort to compete successfully. Strategy is an inextricably woven plan of action that cooperatively embraces a company's vision, objectives, goals, operational plans and policies and guides the company for a competitive advantage (Porter, 1980; Porter, 1996; Steiner, 1979). According to Porter (1996), a deeply rooted organizational strategy is one that makes a lasting difference between having a competitive advantage over competitors and companies who do not.

IT Strategic Alignment

IT strategic alignment is the combined engagement of all IT units strategic, plans processes, investments and decision to support the overall functionality and purpose of the organization goals and objectives (Khadem, 2007). In other words all of the enterprise and functional IT units should actively support the organization's mission, vision, goals and strategies. Execution of strategic alignment requires the merging of all organizational enterprise components, (including Operations, Financial, Human Resources, and IT departments) to consistently support the enterprise's overall business purpose, goals and objectives. Additionally, Chan and Huff (1993), defines strategic alignment as the systemic execution and integration of the organizations business needs with its IT resources.

Strategic Alignment Maturity

Strategic alignment maturity is a continual process where an organization IT, business processes and governance within all departments are effectively merged to achieve the organizations goals and objectives (Luftman, 2003). An organization attains a high alignment maturity when IT and all business functions (marketing, finance, R&D, and so forth) integrate their respective strategies together using organizationally developed processes that include external partners and customers (Luftman, 2003). For an organization to sustain a high alignment maturity, the organization must be able to operate and assess its communications, competence, value measurements, governance, partnerships, technology and skills (Luftman & Kempaiah, 2007).

Competitive Advantage

Competitive advantage is the process by which an organization overcomes its competitive forces within its market and industry, maintains and adapts to constant market changes to the profitability of the organization (Porter, 1980).

Information Technology and Systems Planning

Information technology and systems planning can be defined as the established organizational processes put in place to achieve the organizations objectives through implemented and managed computing and application assets (Teo & King, 1997).

Assumptions and Limitations

A possible limitation to the study is that due to time constraints, not all organizational dynamics and industry settings that may affect or influence IT strategic alignment relationship with IT governance can be included in the study. Furthermore, several industries could not be included in the studies between IT strategic alignment and IT governance.

Nature of the Study

The nature of this research is non-experimental, quantitative correlative research used to determine the extent to which causal relationships exist. The theoretical perspective (Creswell, 2003) in this case is guided by positivism approaches grounded in epistemology. This means that with defined variables, tested theories through hypothesis would guide reliable and validated research results and conclusions (Trochim, 2006).

Independent, dependent variables are measured using an existing instrument without modifications. Data collection takes the form of a survey instrument distributed to participants through the internet. Participants are selected based on their profession and respective industries. The research design ensures that the industry chosen are dependent upon participants' availability. The participants to be identified are pre registered through an online research administrative service. The average participant professional role is business and IT related and are from middle management to executive level. Participants account for over 4500 professionals from the online research service. A survey hosting service is used to administer and collect the results of the survey for analysis. Industries to be targeted may not exceed 5 industries.

A more complete and comprehensive research design details about the nature of the study, backgrounds, survey instrument and control will be provided in chapter three of this dissertation.

Organization of the Remainder of the Study

The organization of this research follows the guidelines ascribed by Capella University. Following chapter 1 is chapter 2 which consist of a literature review, a detailed explanation of the research methodology is presented in chapter 3, presentation of research findings and analysis in chapter 4 and discussions and conclusions in chapter 5. Additional data such as survey consent form, instrument, additional statistical tables, figures, and sample procedures may be presented in appendix.

CHAPTER 2. LITERATURE REVIEW

Introduction

This literature review chapter explores information technology (IT) strategic alignment and IT governance philosophical perspectives and theoretical foundations for the purposes of investigating the impact and relationship between IT strategic alignment and IT governance structures.

Integrating IT strategic alignment with IT governance may prove to be an effective strategic initiative that allows organizations to achieve efficient IT utilization, Return on Investment (ROI) and competitive advantage (Korac-Kakabadse & Kakabadse, 2001). However, decades of IT strategic alignment research and proposed models did not focus on the impacts of IT governance to the alignment process (Paterson, 2004). Luftman & Brier (1999) adds that a successful IT alignment has the capability to transform an organization and an industry.

IT Strategic Alignment

IT strategic alignment is the combined engagement of all IT units' strategies, plans processes, investments and decisions to support the overall functionality and purpose of the organization goals and objectives (Khadem, 2007). In other words all of the enterprise and functional IT units should actively support the organization's mission, vision, goals and strategies. Execution of strategic alignment requires the merging of all organizational enterprise components, (including Operations, Financial, Human Resources, and IT departments) to consistently support the enterprise's overall business purpose, goals and

objectives (Smaczny, 2001). Additionally, Chan and Huff (1993), defines strategic alignment as the systemic execution and integration of the organizations business needs with its IT resources.

The assessment and evaluation of seminal and resent strategic alignment researches reveals that the foundational theory is found in strategy, IT and Information Systems (IS) planning. An understanding of strategy allows for an in depth look at the origins of the literature. This is critical as this literature review claims to establish a historical account of IT strategic alignment as the basis for adding to the body of knowledge and establishing the non existence of literature that explores the correlation between IT strategic alignment and IT governance.

What is Strategy?

One of the major goals of most companies is to gain and maintain competitive advantage (Porter, 1996). Therefore, a strategy is supposed to answer the question of how an organization achieves such goals. The meaning and theory of strategy requires an in-depth look at what constitutes a strategy and its application to multi-disciplines of business and IT. For example, the definition of strategy to the Department of Defense will be conceptually different from a regular commercial business. This argument does not negate the fact that every organizations strategy will be different from one another yet slightly related in the same industry as organizations in the same industry deal with customers, market changes and influences, similar technologies, distribution channels, resources and so forth.

According to Porter (1996), a deeply rooted organizational strategy is one that makes a lasting difference between having a competitive advantage over competitors and

companies who do not. The author writes that regardless of the effectiveness of an organization, the process by which the company is effective does not replace strategy. Porter describes that it is through a well structured strategy that a company sets itself apart from the competition. Porter defines strategy by relating the role that strategy plays in an organization to competition. Porter (1997) further asserts that strategy should not be replaced by operational effectiveness no matter how good. Porter's definition of strategy then becomes collective reasons for a company's goal for which the company seeks a means (to achieve such goals) to get to an end.

While Porter relates strategy to competition, Steiner (1979) relates strategy to organizational management and planning. However, Steiner does not really define strategy and claims that strategy is more of an art rather than an entity that can be defined. On the other hand, Porter's writings agree with Steiner that strategy refers to what an organization does to meet and surpass a competitor's actual or predicted moves. Thompson, Strickland and Gamble (2007) describe strategy as the planned actions that management takes to attract, keep and please customers in an effort to compete successfully. This requires the effective performance of all aspects of the organization. For example, exemplary customer service, operations, pricing, marketing, use and successful IT strategic alignment.

Strategy is an inextricably woven plan of action that cooperatively embraces a company's vision, objectives, goals, operational plans and policies within every aspect of a company's efforts for existence and guides the company for a competitive advantage (Porter, 1980; Porter, 1996; Steiner, 1979). The strategic plan must be comprehensive yet succinct plan that maps out how an organization is going to meet its objectives and maintain competitive advantage. This requires that the organization define its policies, effectively

implements its IT governance structures and attain a high IT strategic alignment maturity that lead to the capture and or keeping of a market share, improves customer satisfaction and redefine itself through product and service innovation. Such a strategy must be sustainable and long term yet flexible to accommodate unplanned market changes such as new entrants.

Competitive Advantage Through Strategy

Van Grembergen, De Haes and Guldentops (2003) and Luftman (2003) assert that organizations depend on IT to support business goals and objectives for the purposes of gaining competitive advantage. Competitive advantage is the process by which an organization overcomes its competitive forces within its market and industry, maintains and adapts to constant market changes to the profitability of the organization (Porter, 1980). The purpose of any strategy can be argued to be the means by which an organization gains competitive advantage. Miles and Snow (1978) found that organizations reactions to three fundamental problems are what shape their strategies. These problems are entrepreneurial, engineering and administrative problems. Based on these identified problems, the author's classified organizations into four strategic types of Defenders, Prospectors, Analyzers and Reactors. Miles and Snow (1978) research introduced a theoretical framework of adaptive cycle grounded in empirically based strategy typology that has defined subsequent research by other scholars even till today. The author's observational research supports the qualitative study that drives a constructivist and interpretivist approach. These theories and configurational analysis have shape the application of strategy in both business, IT and IS as evident in majority of seminal and recent academic articles such as seen in the works of

Hirschheim and Sabherwal (2001), Sabberwal and Chan (2001), and many more researchers.

Porter (1980) is one of the prominent contributors to strategy and competitive advantage literature. Porter describes the meaning and application of strategy using five force analysis approaches for competitive advantage. The author's research was not geared towards IT governance and IT alignment. However, one of the purposes of IT strategic alignment is to gain competitive advantage as stated by Henderson & Venkatraman (1993), Weill and Broadbent (1993), Luftman, Lewis and Oldach (1993), Reich and Benbasat (1996), Luftman and Brier (1999), Hirschheim and Sabherwal (2001) and Luftman (2003). The understanding of strategy and competitive advantage and its theories are important to IT strategic alignment. Porter (1980) maintains that managers must be flexible in order to adapt to competitive forces and constant market changes. Porter's writings on strategy and competitive advantage have paved the way for several researches in strategy and competitive advantage assessment. Furthermore, the authors work is often grounded in empirical observations in a constructivist and interpretivism approaches that are generalized in nature and applicable to all industry settings.

Information Technology and Systems Planning

Information Technology and systems planning can be defined as the established organizational processes put in place to achieve the organizations objectives through implemented computing and applications (Teo & King, 1997).

Venkatraman (1985) research developed key guidelines for IS planning research. Since publication, Venkatraman has been cited in countless academic articles researching IS

planning and IT strategic alignment in organizations. The author illustrated similarities between the research streams of IS planning and organizational strategic planning and presented three major guidelines from a critical review and evaluation of the progress made in the strategic research stream for over a decade (1975 – 1985). Venkatraman adopted an overarching research framework rooted in the contingency theory traditions. Venkatraman's framework has gained researchers attention toward developing a program of research on IS planning. Brancheau and Wetherbe (1987) in a qualitative research study that used open ended questions identified the top ten issues in IT management. The study resulted in a five-part Delphi survey of chief IT executives and corporate general managers indicating the most critical IT management issues and consensus on their importance. The top issue among the ten identified in this research was IT and IS strategic planning and alignment.

Following Brancheau and Wetherbe research was a comparable study by Henderson and Sifonis (1988) to understand the critical importance of IT and IS planning that is able to provide the organization with key markets for IT products and services, internal consistency and a means to assess the validity of the planning process. The author's research methodology was an empirical perspective (qualitative) grounded in axiology. The two author's present a study that proposes a framework for successful IT and IS planning.

A study by Nath (1989) in a very similar philosophic orientation and methodological approaches compared to Brancheau and Wetherbe (1987) found that IT management and business management perceived business and IT alignment as important to achieving business goals in organizations. However, as identified by Brancheau & Wetherbe (1987) regarding IS issues, Nath (1989) found that these issues caused a lack of agreement between the two management groups (business and technology) in reaching an alignment or

achieving a successful IT strategic alignment. These issues have been discussed in subsequent Management Information System (MIS) and business alignment articles. According to Nath (1989), IS and IT planning continue to emerge as a top issue for business management.

Venkartraman (1999) demonstrates (see Figure 1) how the value of IT is assessed in organizations when viewed as a service provider or as a business strategic partner.

Venkartraman discusses the importance of IT governance to organizations and writes that when IT is viewed as a strategic partner as seen from the integration of IT and business strategies, organizations has a better chance of achieving IT strategic alignment. However, organizations continue to engage IT as a service provider while expecting to realize IT strategic alignment success (Luftman, 2003).

IT as a Service Provider	IT as a Strategic Partner
IT is for efficiency	IT is for business growth
Budget are driven by external benchmarks	IT Budgeta are driven by business strategy
IT is seperable from the business	IT is inseperable from the business
IT is seen as an expense to control	IT is seen as an investment to manage
IT managers are technical experts	IT manager are business problem solvers

Figure 1. IT as a service provider or as a strategic partner to the business (Venkartraman, 1999, p. 30).

IT Strategic Alignment Theories and Models

Strategic Alignment Model (SAM) is a prominent model proposed by Henderson and Venkatraman (1993). The authors formulated the model from four fundamental strategic choice domains. These domains were the business strategy, IT strategy, organizational

infrastructure and processes. Henderson and Venkatraman further illustrated the integration of organizations business with IT by the proposed model (see Figure 2).

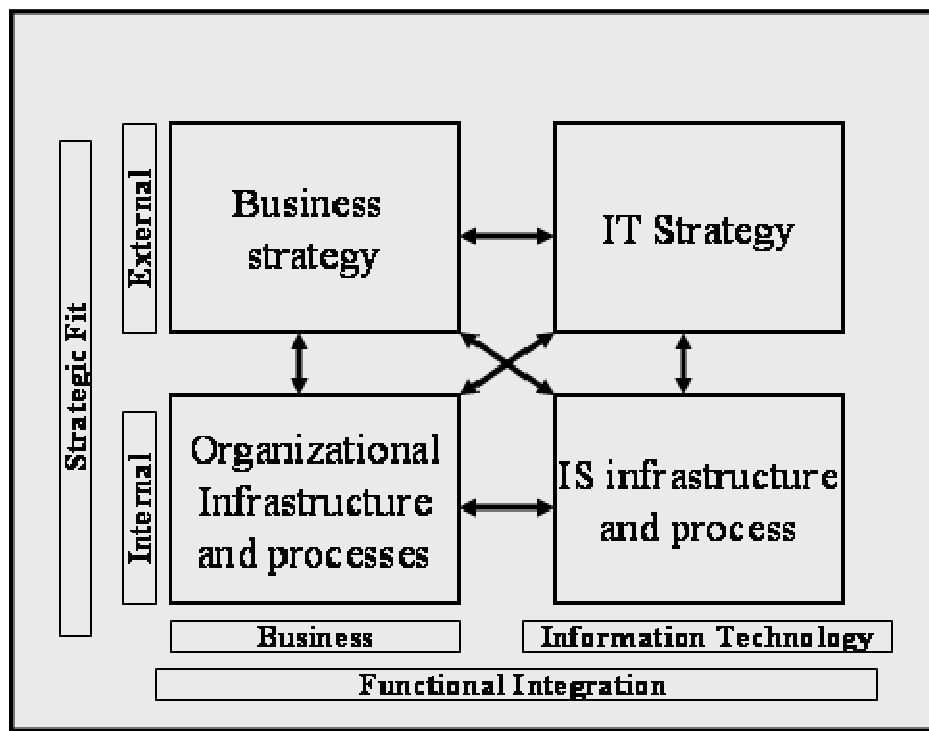


Figure 2: Strategic Alignment Model (SAM) (Henderson & Venkatraman, 1993, p. 8).

Henderson and Venkatraman research purpose was to create a strategic alignment model that would enable managers to understand and achieve strategic alignment. Henderson and Venkatraman (1993) SAM model did not account for the impact of IT governance to IT strategic alignment process. In comparison, Weill and Broadbent (1993) conducted an empirical study that investigated Banks in Australia. The purpose of Weill and Broadbent study was to identify organizational practices that inhibited or enabled the achievement of IT strategic alignment. Using a written and interview survey instrument that collected data from several Australian Banks, the authors sort to identify what key practices gave an organization a comparative advantage over its competitors.

The result of Weill and Broadbent study was a proposed strategic alignment model (see figure 3) that built upon the earlier model "SAM". The proposed model consisted of a concentric nature of four factors accounting for the strategic fit and functional integration of an organizations strategic alignment.

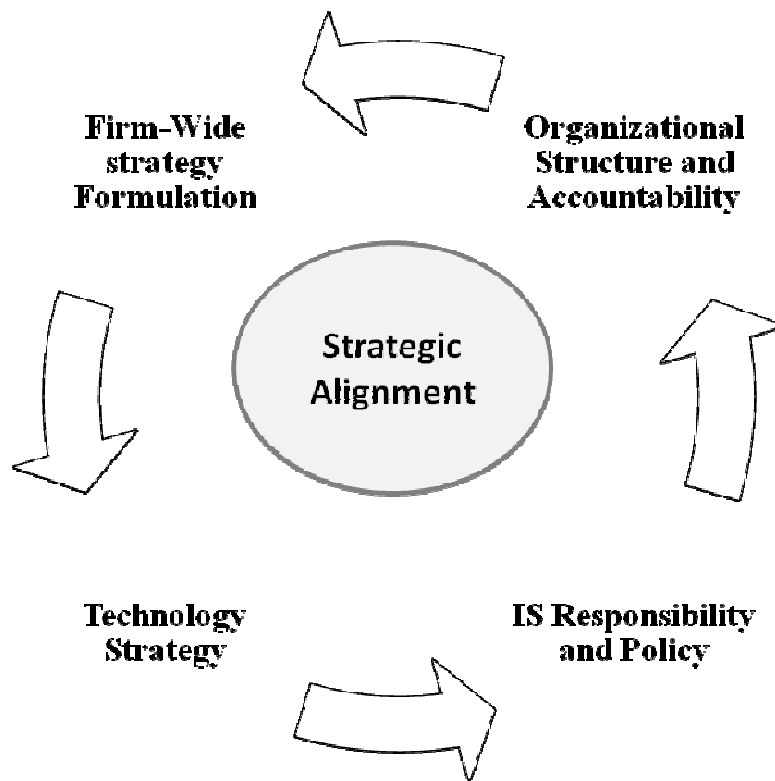


Figure 3: IT strategic alignment Model (Weill & Broadbent, 1993, p. 175).

In comparison, Henderson and Venkatraman strategic choice domain model and Weill and Broadbent management implications and actions driven model achieved different purposes. Weill and Broadbent (1993) model focused on strategy through customer driven IT and IS alignment rather than IT that are product driven. Henderson and Venkatraman (1993) model (SAM) on the other hand, centered on the application of an overall organizational strategic fit using the strategic choice domains. With these limitations or a divers approach to addressing alignment, these authors' have been cited in several subsequent strategic

alignment research such as Teo and King (1997), Segars and Grover (1999), Luftman and Brier (1999), Hirschheim and Sabherwal (2001) and Sabberwal and Chan (2001).

In an effort to address how IT strategic alignment models can be practical for organizations, Teo and King (1997) discussed the difficulty in translating previous models into practical terms easily applicable in the real world and writes that the dilapidated trends in research on strategic alignment could be based on the fact that there is no comprehensive way to address alignment between all organizational entities. Teo and King (1997) proposed an evolutionary contingency model to enable researchers to examine whether the contingency variables were enablers to an organizations evolution through the various types of business and IS planning integration. Teo and King proposed IT strategic alignment integrated framework incorporated other contingency variables in the research model. Teo and King assert that this approach attempts to understand the interrelationships within and among organizational factors. However, there was no IT governance consideration. Segars and Grover (1999) discusses very similar IT strategic alignment concerns as Teo and King and asserts that most relevant literature on IT strategic alignment is flooded with "descriptions of planning tools and methodologies, and investigations that examine [*sic*] activities from the perspective of process-based characteristics" (p. 199) but does not model present day organizational business and technology planning.

Despite the agreement between Teo and King (1997) and Segars and Grover (1999) respective research, reconciling discussions presented by the authors are not feasible without additional extensive research work and literature review. An evaluation of the models found from the two groups of researches (Teo & King, 1997; Segars & Grover, 1999) is contradictory. Teo and King (1997) "formulates a model by conceptualizing a research

framework that combines the evolutionary perspective and the contingency perspective" (p. 208) while Segars and Grover (1999) uses a multivariate analysis where the methodology examined data gathered from 253 organizations that suggested that five distinct profiles of strategic planning can be identified based on dimensions of comprehensiveness, formalization, focus, flow, participation and consistency. The contradictory however, does not take away from the contribution to the literature as each group of authors' address a different dimension of IT strategic alignment within an organization.

Sabberwal and Chan (2001) research on IT strategic alignment critiqued IT strategic alignment models based on Miles and Snow's (1978) typology of Defenders, Prospectors and Analyzers by identifying the models limitations in the use of the typology. Sabberwal and Chan wrote that in order to ascertain the level of success among organizations under a strategic alignment study, theoretical profiles of the typology had to be further categorized using Venkatraman's (1985) operationalization of business strategy. Sabberwal and Chan research work shared more light into how future strategic alignment models and theories should be developed. Furthermore, the author's article had implications for researchers reviewing the literature as it gives them a foundation from which to support future research as indicated by both Hirschheim and Sabherwal (2001) and Sabberwal and Chan (2001). Hirschheim and Sabherwal and Sabherwal and Chan examined previous literature as both groups of author's draws from Miles and Snow's typology of Defenders, Prospectors and Analyzers in classifying their organizations researched.

IT strategic Alignment Through Human Resource

A look at the seminal work of Keen (1993) extends the IT strategic alignment research to include the effects of human resource. Keen's research identified what difference management could make when all organizations had the same access to technology and information, Keen (1993) found that gaining competitive advantage through IT meant that management should integrate business processes with its IT and human resources. An evaluation of Keen's research and Weill and Broadbent (1993) depict some similarities with the research work of Luftman, Lewis and Oldach (1993) as all three groups of researchers sort to uncover organizational processes grounded in the theory of strategy as the phenomena that made strategic alignment possible.

IT strategic Alignment Through Social Dimension

While the authors discussed the developed strategic alignment models for achieving alignment, Reich and Benbasat (1996) research purpose and objective was to comprehend the nature of the linkage construct and to report on a project that developed and tested measures of the social dimensions of business and IT linkage. Reich and Benbasat efforts were to address the inconsistent application of alignment models and the misunderstanding of the link between business and IT. After conducting extensive interviews and collecting data from IS and business executives within 10 business units in three large Canadian life insurance companies, the author's found that "understanding of current objectives and shared vision for the utilization of information technology are proposed as the most promising potential measures for short and long-term aspects of the social dimension of linkage, respectively" (Reich & Benbasat, 1996, P. 55). Reich and Benbasat research was

one of the first strategic alignment studies to go outside the traditional disciplines of strategy and planning into the social dimensions of organizations.

Recent IT Strategic Alignment Studies

Hirschheim and Sabherwal (2001) research focused more on the responsibilities and variables that actually brings strategic alignment to fruition. Such responsibilities and variables included organizational inertia, sequential attention to goal, knowledge gaps, split responsibilities and underestimation of problems. These variables may seem as external elements to IT alignment, however, it is the expert marriage of all organizational elements that makes an alignment successful (McKeen & Smith, 2003). A limitation found in Hirschheim and Sabherwal research is the absence of cognitive influences and IT governance effect on IT strategic alignment. Hirschheim and Sabherwal (2001) research draws heavily on Miles and Snow's (1978) strategy typology and Venkatraman's (1985) operationalization.

While the importance of strategic alignment had been documented in literature and several IT strategic alignment models proposed, Luftman and Brier (1999) research problem was that organizations faced difficulty in achieving IT strategic alignment. The study purpose was to find what the difficulties were. The author's qualitative research (using interviews and observations) surveyed executives attending classes at IBM's Advanced Business Institute (IABI) that represented over 500 firms in 15 industries. Luftman and Brier (1999) concludes that there were six enablers and six inhibitors that affected the success of IT strategic alignment of which the most prominent were IT governance through executive support and decision making, understanding the business, IT and business

relations, and leadership. These were present in both the enablers and inhibitors. These alignment issues caused Luftman (2003) to develop a model based on a modified Carnegie Mellon University's Capability Maturity Model (CMM) to address these issues. The model addressed limitations found in previous strategic alignment models. Luftman (2003) model encompassed the organizations communications maturity, competency and value maturity, governance maturity, partnership, technology and skill maturity. However, Luftman's maturity model failed to assess the relationship of IT governance structures to the alignment process due to a focus on the organizations business processes. Evidently, Peterson (2004) research reveals that an organizations IT governance serves as the enabling mechanism to enforce alignment execution. On the other hand, the inclusion of all organizational dimensions would have complicated Luftman's study outside the scope of the research purpose. Below in figure 4 is a summary of important contributions to IT strategic alignment research, models and theories.

Author(s)	Subject of study and added value
Avison et al. (2004)	Validating the SAM Model
Bergeron et al. (2003)	Link between strategic alignment and business performance
Broadbert and Weill (1998)	Enablers and barriers in achieving alignment
Burn and Szeto (2000)	Factors contributing to successful strategic alignment
Croteau and Bereron (2001)	Relationship between business strategy, technological deployment and organizational performance
Feurer et al. (2000)	IT strategy as a driver for alignment
Henderson & Venkatraman (1993)	Strategic Alignment Model (SAM)
Hirschheim and Sabherwwal (2001)	Link between alignment progile and business strategy
Luftman (2003)	Assessing Business and IT Alignment
Luftman and Brier (1999)	Organizational assessment using the SAM and six-step approach for achieving strategic alignment
Luftman and Brier (1999)	Factors contributing / hinderiing strategic alignment
Luftman & Kempaiah, 2007	A line has been drawn: A report on the failures of achieving IT strategic alignment in organizations
Maes (1999)	An Extension of the strategic alignment model (SAM): 3*3 matrix approach
Reich and Benbasat (1996)	Measuring the Linkage between Business and Information Technology Objectives :The linkage construct
Sabherwal and Chan (2001)	Mapping business strategy to IT strategic Alignment
Smaczny (2001)	Fution between IT and the business
Teo and Ang (1999)	Study on critical success factors for IS/business alignment
Teo and King (1997)	Contingency model
Van Grembergen et al. (2005)	Linking business goals to IT goals

Figure 4. Summary of important contributions to IT strategic alignment research, theories and models.

Contributions to Henderson and Venkatraman Model (SAM)

Prominent IT strategic alignment model such as SAM by Henderson and Venkatraman (1993) is widely accepted as scholars and practitioners build upon the SAM model as demonstrated by Weill and Broadbent (1993; see Figure 3). The SAM model (see Figure 2) demonstrates the internal and external dynamics of organizations strategic, functional fit and integrated domains. Maes (1999) debated the limitations of the SAM model and developed an extension of the SAM model (see Figure 5).

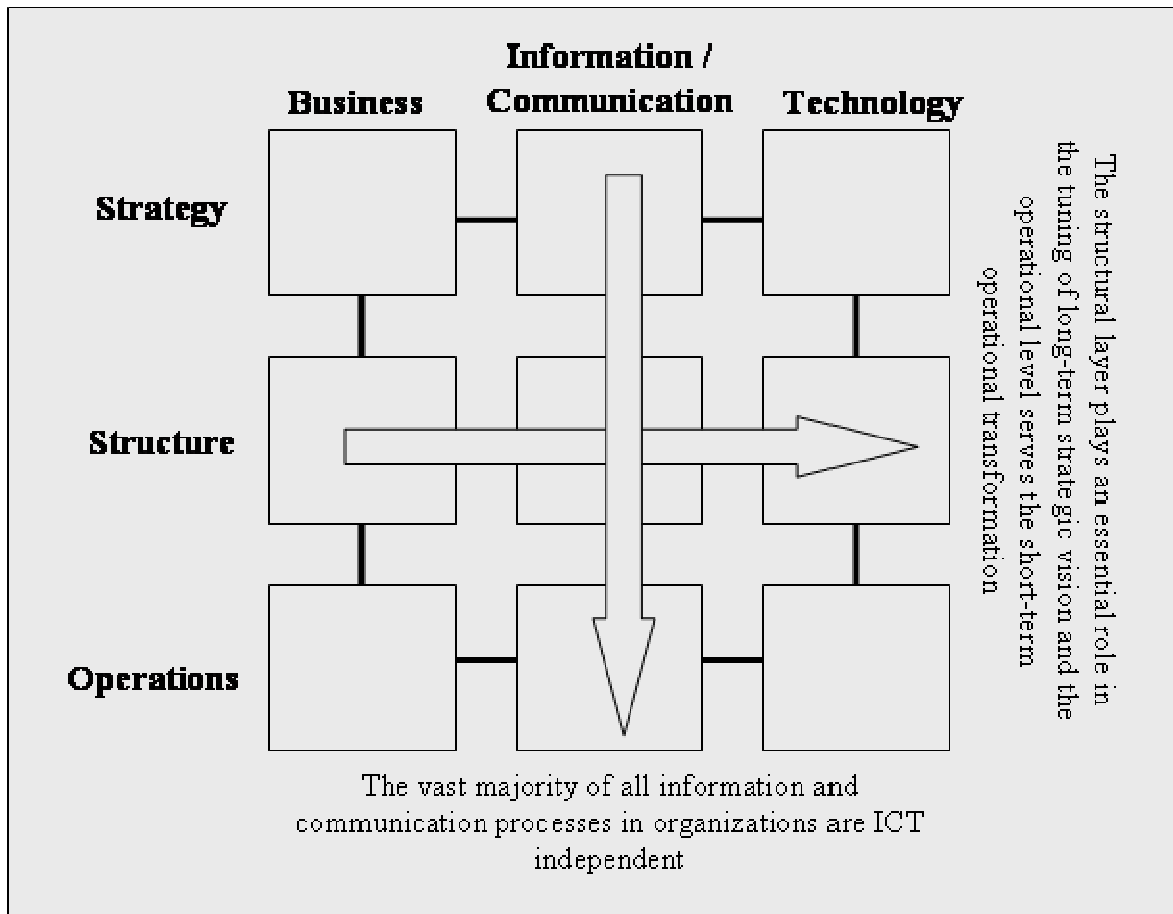


Figure 5: Extension to the SAM, (Maes, 1999, p. 9).

Maes (1999) asserted that the SAM model while a good strategic alignment foundation lacked organizational elements such as decision making and communication required to bring the SAM model to fruition. Furthermore, Maes mentions that the SAM model does not account for the short-term and long-term operational realities faced by organizations. Therefore, Maes created a modification of SAM that accounted for an organizations cross communication needs, operations, structures and long and short term strategic vision.

IT strategic alignment models that emanated from SAM are evident in the subsequent models seen from Maes (1999), Luftman and Brier (1999), Segars and Grover (1999), Smaczny (2001), Sabberwal and Chan (2001) and Luftman (2003) among other

prominent seminal strategic alignment authors such as Sauer and Yetton (1997), Teo and King (1997), Weill and Broadbent (1993) (see Figure 3) and Keen (1993). All IT strategic alignment model from these authors have been received by academia and practitioners as excellent models for organizations. This is evident due to the models adaptation by many organizations (Luftman, 2003). However, organizations that have adapted these models to include SAM continue to face IT strategic alignment challenges (Luftman & Kempaiah, 2007).

IT Governance impact on IT Strategic Alignment

IT governance has become prevalent as organizational executives adapt IT governance structures or frameworks to guide and sustain business goals and objectives (ITGI, 2003; Van Grembergen, 2002). However, adapting a governance structure does not imply that the organization has effectively implemented a governance structure that aligns with IT and sustains and grows the business (Weill & Ross, 2005). With IT governance focus on specific IT decisions, functions, leadership responsibilities and management, the possibility of IT governance enabling a successful IT strategic alignment is very likely (Peterson, 2004; Weill & Ross, 2005). This process could be a factor of the degree to which IT governance relates and impacts IT strategic alignment.

The impact of IT governance is important to the theory of IT strategic alignment (Korac-Kakabadse & Kakabadse, 2001). Sambamurthy and Zmud (1999) describes IT governance as a measure of organizational authority for IT activities. Such a measure of authority is critical for a strategic alignment success. The author's state that "during the last 20 years, three primary modes of IT governance have become prevalent: centralized,

decentralized, and the federal mode" (Sambamurthy & Zmud, 1999, p. 261). While Sambamurthy and Zmud discusses structures of IT governance, Peterson (2004) adds that IT governance has emerged as the key to realizing IT business value. The author adds that "IT governance describes the distribution of IT decision-making rights and responsibilities among different stakeholders in the enterprise, and defines the procedures and mechanisms for making and monitoring strategic IT decisions" (Peterson, 2004, p. 7). Consequently, an organizations implementation of IT governance structure and associated decision making may influence the success of IT strategic alignment. The decision-making process that communicates business needs to IT and vice versa (see Figure 6) is enhanced by allocating decision-making authorities across business and IT functions through IT governance. Therefore, this research will explore the degree of relationships between the quantitative variables (IT strategic alignment and IT governance).

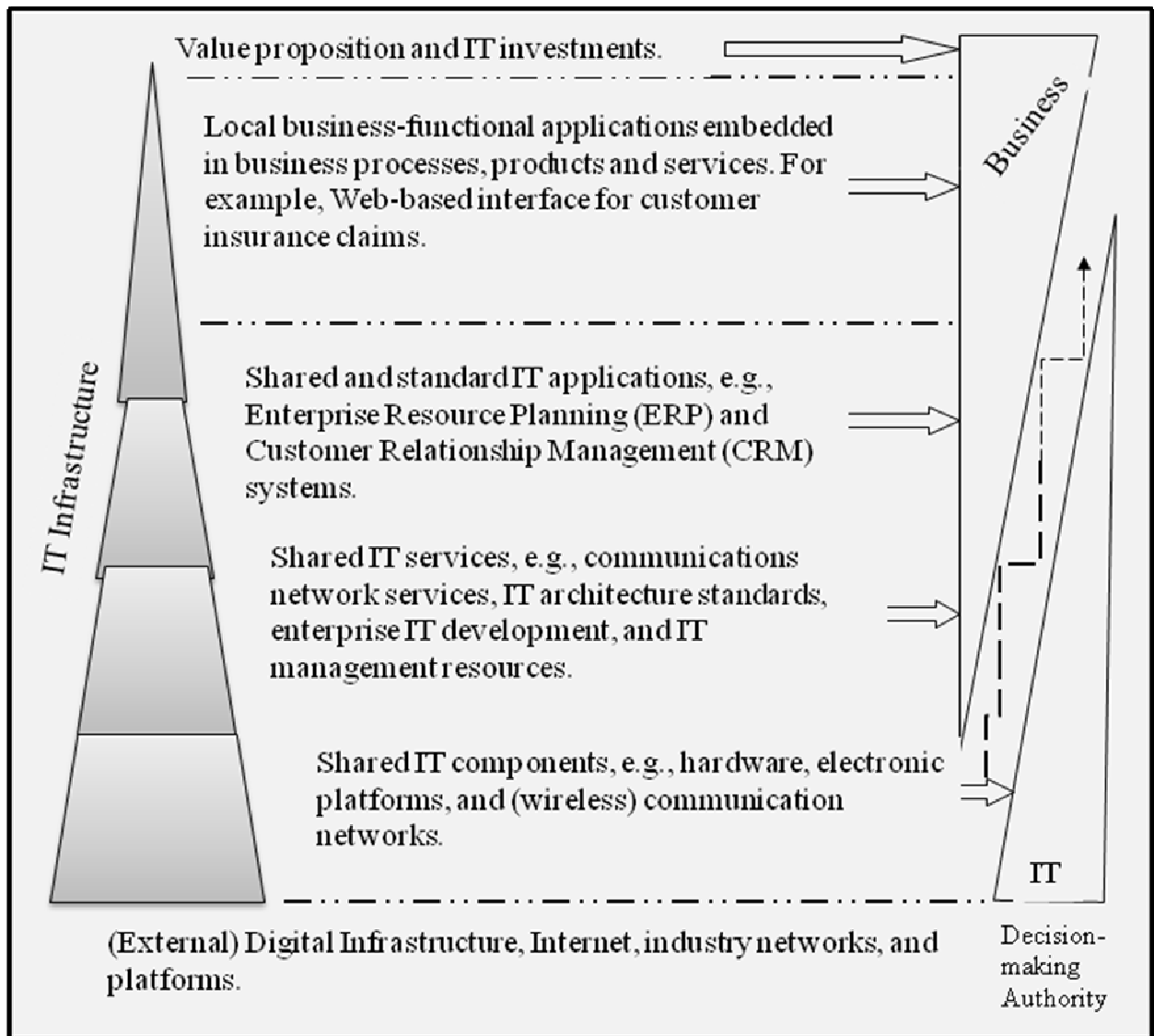


Figure 6: Allocation of IT Decision-Making Authority across Business and IT management (Peterson, 2004; Weill & Ross, 1998)

Wilbanks (2008) analyzes the divergent resource management between business leadership and IT governance and wrote that "an organization that wants to grow and be successful, must not only manage IT resources, but also use those resources throughout the company as part of the governance structure" (p. 59). Furthermore, Wilbanks (2008) states that "IT governance implies a system in which all stakeholders, including the board, internal

customers and related areas such as finance, have the necessary input into the decision making process" (p. 61). A governance structure as defined by Wilbanks fosters a cooperative environment for an effective execution of IT strategic alignment that prevents a single stakeholder, typically IT, from being blamed for poor decisions and high cost of IT.

According to IT Governance Institute (ITGI) (2003), IT governance ensures that IT goals are met and IT risks are mitigated such that IT delivers value to sustain and grow the business. The institute adds that "IT governance drives strategic alignment between IT and the business and must judiciously measure performance" (p. 37). However, a relationship that describes or documents the extent to which IT governance structures relates to and impacts organizational IT strategic alignment is missing from literature. Furthermore, organizations that chose to combine IT governance structures continue to face difficulties as to the exact implementation strategy and combination of structures that is applicable (Peterson, 2004). Further investigation into IT governance structural relationship to IT strategic alignment may contribute to existing knowledge as well as add practical know-how to managers and executives planning and developing IT governance in an effort to achieve IT strategic alignment.

IT Governance Structures and Relational Mechanisms

The effective implementation of an IT governance structure requires an understanding of how IT and the business should work together (Weiss & Anderson, 2004). The relational mechanisms between IT governance structures, business functions, and IT processes and communications are critical to preventing IT alignment failure (Luftman, 2002). Reich and Benbasat (2002) adds that while IT governance can drive IT decision-making, relational mechanisms such as business and IT communication, knowledge sharing,

knowledge management, organizational decision making, IT leadership, Job skill level, and so forth can derail the effective execution of IT governance leading to unsuccessful IT strategic alignment. The dynamic complexity of an organizations structures, processes and relational mechanisms (see Figure 7) that influence IT governance and IT strategic alignment. De Haes (2007) calls this dynamic the social dimension of IT governance where organizational members (people) become the focus in the IT strategic alignment process.

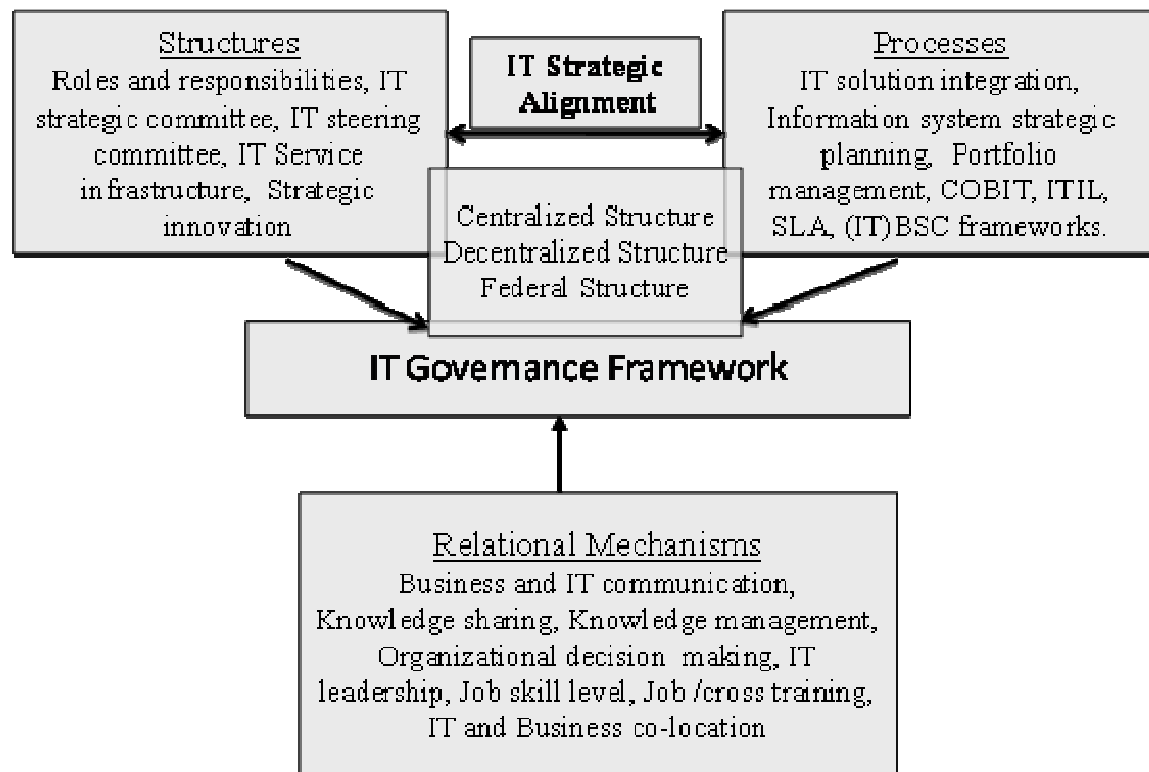


Figure 7. Structures, Processes and Relational Mechanisms for IT Governance and IT Strategic Alignment (De Haes, 2007; Peterson, 2004).

Centralized, Decentralized and Federal IT governance Structure

Organizations choose from three IT governance structures of Centralized, Decentralized or Federal IT governance structures (Weill & Ross, 2005). According to

Luthman (2003), the IT governance structural choice an organization makes affects the IT strategic alignment process. This is evident as relational mechanisms impact IT governance structures and the alignment process (see figure 8). In a Centralized IT governance structure, the organization's corporate IT unit has complete authority for all IT decisions while in a Decentralized structure, each functional unit within the organization assume decision making authority for their IT architecture, standards, and applications (Peterson, 2004). For example, an accounting or human resource department will have an IT unit that has full authority and responsibility over all IT decisions. In a Federal IT governance structure, corporate IT department serve as a central unit and has decision making authority and responsibility over corporate IT architecture. However, common systems and standards decisions fall within each functional unit (Luftman, 2003). In other words, the Federal structure is a combination of the Centralized and Decentralized structures. The tradeoffs that an organization makes when a centralized, decentralized or federal structure is adapted (see Figure 8) as the IT governance structure of choice has a direct relational impact on the organizations IT strategic alignment drivers (Peterson, 2004; Brown & Magill,1998; Rockart et al., 1996).

IT Strategic Alignment Drivers	Centralized IT Governance	Decentralized IT Governance	Federal IT Governance
IT Synergy	+	-	+
IT Standardization	+	-	+
IT Specialization	+	-	+
Business Responsiveness	-	+	+
Business Ownership	-	+	+
Business Flexibility	-	+	+

Figure 8. Peterson (2004), Brown and Magill (1998) and Rockart et al. (1996): IT Governance Structural Tradeoffs and the Best of Both.

Contribution to the Literature

This research adds knowledge to the literature domain of IT strategic alignment by testing hypothesis on the statistical correlation between IT strategic alignment and IT Governance. Additionally, the analysis of findings sort presents a conceptual framework that unifies IT strategic alignment and IT governance. Discussions on the degree of IT governance impact on IT strategic alignment and relationships may guide business executives and extend the cumulative research of strategic alignment. Furthermore, the results may enable executives within U.S. industries and beyond to use the discussions and findings to facilitate business goals and objectives. The conclusion of the study yields the discovery of IT strategic alignment and IT governance relationships impacts relevant to today's 21st century organizations.

McKeen and Smith (2003) argues that aligning IT governance with IT strategic alignment to achieve business goals is nothing less than the complete fusion of the two functions strategically, structurally, and culturally. The combination or marriage of such entities means that organizational leaders must deal with how all decisions are made and not

just business decisions to prevent failure of IT strategic alignment. Furthermore, a quantitative test of IT governance structural relationship with IT strategic alignment are able to draw statistical conclusions based on a set of hypothesis in an effort to address the literature gap and as an added knowledge to the literature domain of strategic alignment. Avison, Gregor and Wilson (2006) asserts that there is a direct relationship between the failure of an IT strategic alignment and the failure of an organizational (business) goal due to miss-implementation of IT Governance or the lack of governance. Consequently, there is absence of literature that tests such theory and or hypothesis. Therefore, the purpose of this study is to discover the extent to which IT strategic alignment correlates with IT governance.

The relationship and correlation between IT strategic alignment and IT governance as depicted in the model (see Figure 9.0) shows the possible contribution to the research. IT governance as described by several authors in the literature can enabled a successful IT strategic alignment when implemented within a governance structure conforming to an organization.

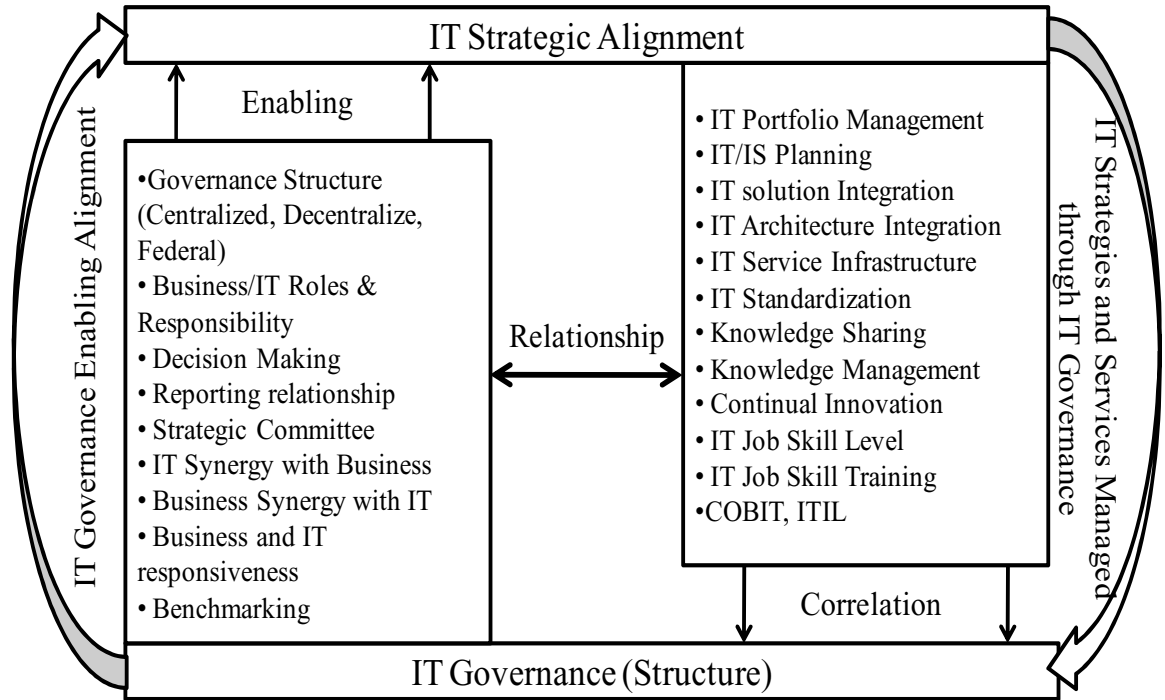


Figure 9. A model of the relationship and correlation between IT strategic alignment and IT governance.

While an IT governance structure creates for an organization a framework for effective IT decision making, planning, and processes and measured valued services, IT strategic alignment (see Figure 9) may not have a yardstick from which to enable relationship measurements between the organizations technologies that drives business goals and objectives. IT services must be measured within a governance structure where IT is valued as a strategic partner to the business.

An assessment and evaluation of IT strategic alignment theories and models in this research study establishes the theoretical foundation and significant importance to investigate IT governance relationship and impacts missing from IT strategic alignment literature.

Literature Review Summary

Henderson and Venkatraman (1993) development of SAM derived from strategy and IT and IS planning. The SAM gave way to several IT strategic alignment contributions and models. Hirschheim and Sabherwal (2001) research work on strategic alignment extensively included several trajectories and performance measures such as the "Utility Profile (Alignment through Low-Cost Delivery), Alliance Profile (Alignment through Partnering), and Infusion Profile (Alignment through Business Leadership)" (p. 90). The authors' research limitation is seen from having to keep the scope of the research manageable. Therefore, organizational element such as IT governance structure and internal and external business dynamics that impact IT strategic alignment were eliminated. According to Sabberwal and Chan (2001), to derive operationalization meant assessing performance implications of alignment in organizations. This means that alignment was examined between the organizations "IS strategy and the theory-based IS strategy corresponding to the business strategy" (p. 12). Further studies recommended by the authors as briefly described show a gap in literature.

Smaczny (2001) documented the gaps existent in previous IT strategic alignment literature. Smaczny found that while the works of Henderson and Venkatraman (1993), Weill and Broadbent (1993), Keen (1993) and Sauer and Yetton (1997) greatly contributed to IT strategic alignment literature and models, the studies were largely confined in theoretical organizational alignment issues and were very generalized in nature lacking other dimensions of organizational structure such as governance, industry diversity and culture. Organizations continue to face IT strategic alignment difficulties (Wilbanks, 2008; Luftman & Kempaiah, 2007). The extant literature discusses IT strategic alignment without

investigating IT governance structural elements and their degree of impact or influence. If organizations continue to have difficulty with IT strategic alignment, the solution may lie beyond IT specific domains such as documented by the seminal works of Brancheau and Wetherbe (1987) and Nath (1989).

Research studies by Keen (1993), Luftman, Lewis and Oldach (1993), Reich and Benbasat (1996), Sauer and Yetton (1997) Teo and King (1997), Luftman and Brier (1999), Sabberwal and Chan (2001) Smaczny (2001), Luftman, (2003) and Luftman and Kempaiah (2007) followed with models built on the SAM, frameworks and solutions that did not investigate or explore IT strategic alignment relationship with IT governance. Therefore, the inevitable change and organizational dynamics hindering alignment may be controlled by IT governance structures as described by Peterson (2004) and Avison, Gregor and Wilson (2006). Therefore, an understanding may be derived from the correlation between IT strategic alignment and IT governance structures.

A common theme recognized throughout this literature review exposes the need for future IT strategic alignment research to broaden the area of study to include relationships, impacts and influences of organizational IT governance structures, dynamics and management decisions that are beyond the focus of business and technology strategies. Further evaluation of the literature above presents a gap that suggests that a correlation between IT strategic alignment and IT governance requires further investigation. The author identifies that the review of prominent seminal and recent IT strategic alignment literature, assessment of strategic alignment models and IT governance literature suggests that while IT governance is importance to the alignment process and may lead to IT strategic alignment, it is missing from the literature.

CHAPTER 3. METHODOLOGY

Purpose of the Study

The purpose of the quantitative correlational study was to explore the extent to which Information Technology (IT) strategic alignment are impacted by IT governance structural elements based on an alignment maturity model and an IT governance framework (Luftman & Kempaiah, 2007; Peterson, 2004 and Luftman, 2003). The study focused on IT strategic alignment relationship with IT governance. The second purpose was to determine the degree of impacts that may exist between the variables. The research explored selected U.S. industries made up of over 4000 business and IT executives and middle managers who are in the line of decision making regarding the organizations IT and governance structures to add knowledge to business leaders and researchers.

Research Questions and Hypothesis

The following research questions were utilized to develop the quantitative research strategy.

Research Question 1

Does a correlation exist between IT strategic alignment and IT governance?

Research Question 2

To what extent is there a correlation between IT strategic alignment and Centralized IT governance structure?

Research Question 3

To what extent is there a correlation between IT strategic alignment and Decentralized IT governance structure?

Research Question 4

Does a correlation exist between IT strategic alignment and Federal IT governance structure?

Hypotheses

The above study research questions were quantitatively evaluated using the following hypotheses.

H1₀: There is no correlation between IT strategic alignment and IT governance.

H1_a: There is a positive correlation between IT strategic alignment and IT governance.

H2₀: There is no correlation between IT strategic alignment and Centralized IT governance structure.

H2_a: There is a positive correlation between IT strategic alignment and Centralized IT governance structure.

H3₀: There is no correlation between IT strategic alignment and Decentralized IT governance structure.

H3_a: There is a positive correlation between IT strategic alignment and Decentralized IT governance structure.

H4o: There is no correlation between IT strategic alignment and Federal IT governance structure.

H4a: There is a positive correlation between IT strategic alignment and Federal IT governance structure.

Research Design

This research was a non-experimental, correlative quantitative research used to determine the extent to which causal relationships exist for exploring the research questions. The research is exploratory in nature because it addresses the fact that the correlation between IT strategic alignment and IT governance is missing from the literature. The research was designed to use a web-based survey to collect quantitative data from multiple industries business and IT executives and managers. According to Swanson and Holton (2005), quantitative study is a research approach that often starts with a developed theory that leads to hypothesis, specific statistical testing and strict analysis. Creswell (2003) adds that a quantitative research often exemplifies experimental or non experimental strategy of inquiry that often follows a pre and post test measures of attitudes or actions. This means that an experimental study often demonstrate the assumptions commonly associated with the positivist traditions while non-experimental studies follow a process of understanding relationships or the correlation between variables. Following Swanson and Holton (2005) and Creswell (2003) prescription for quantitative methodology, the investigator adapted a correlative quantitative research methodology used to establish research procedure that uses closed ended research questions to test the relationship between identified variables.

Conceptual Framework

A conceptual framework presents a methodical approach for showing systematic concepts for further analysis with the potential for solution in a diagram (Maxwell, 2005).

Therefore, this research presents a framework (see Figure 10) in a form of a relational model that shows potential relationship to be investigated.

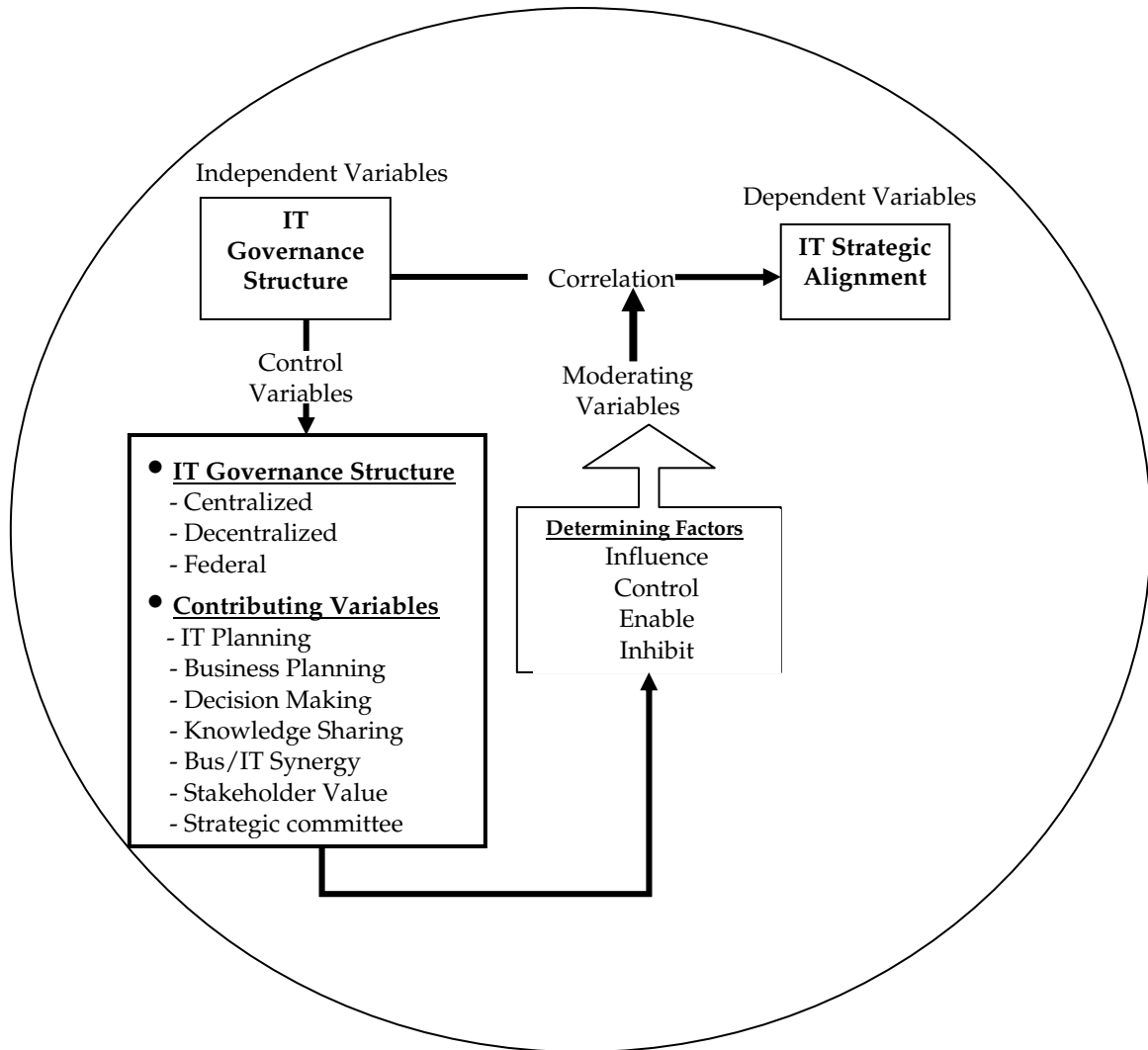


Figure 10. A conceptual framework showing potential relationship between dependent and independent variables.

Population and Sample

Data source for the study came from business and technology management professionals who have knowledge of their organization's IT strategic alignment and IT governance and are part of creating and or maintaining these processes. Participants were required to be IT and or business decision makers in some capacity from the online research service. The business and technology professionals demographic formed the basis for the study's population sample. The average participant professional role was line managers, senior management to executives. Participants invited accounted for over 4000 professionals from an online research service. The online research service is an organization with registered members who participate in knowledge sharing in various disciplines. While registered members are well over two million and come from backgrounds that include business and technology, access was granted to only registered business and technology professionals. All members are pre-screened by the organization before granted membership status. A sample size of $n=300$ was received. This was deemed as successful responds in an attempt to ensure a fairly even distribution between participants. The $n=300$ is based on a power analysis as further described below.

The sample size of $n=300$ is determined based on calculating the sample size that assessed a 95 percent confidence level with a confidence interval of 5.44 indicating a range for response rates on surveys. According to Swanson and Holton (2005), a random sampling is used to ensure that no bias exist in the choice of survey participants. This process is indicative of a scientific sampling process where a small subset of a population is selected as representative of the overall population through methods of probability (Fowler, 2009). Swanson and Holton (2005) add that in a simple sample strategy, all members of the

targeted population have the same chance of being selected for the survey. Participants selected came from Defense, Banking and Insurance, Biotech, Manufacturing and Telecommunication industries. These five industries were selected in an attempt to minimize the scope of the study as well as address resource limits for this study. This is a research limitation and will be addressed in chapter 5. While a consent form was incorporated into the survey instrument, each participant received a welcome letter (see Appendix A), an informed consent form (see Appendix B) as part of the invitation.

Instrumentation/Measures

Independent, dependent and moderating variables were measured by distributing questionnaire that included a welcome letter, an informed consent form and a link through e-mail (the research instrument) to participants after approval to conduct research was granted through the Internal Review Board (IRB). The instrument is a Strategic Alignment Model (SAM) instrument from Luftman (2003) that was adapted without modifications. Permission was granted for the use of the instrument (see Appendix C). Evidence of the instruments validity and reliability was depicted in the research work of several IT strategic alignment researchers (Luftman, 2000; Sledgianowski & Luftman, 2005; Luftman, 2005; Nash, 2006; Dorociak, 2007). Furthermore, the first broad use of the instrument by Luftman investigated over 50 Global 500 companies (Luftman, 2003). Therefore, the translation validity of face and content validity is supported. Measurement of construct validity allows a researcher to test for the degree to which inferences can legitimately be made from the operationalization in a study and how it translates to the theoretical constructs on which the operationalization is based (Trochim, 2006). Content validity of this study's instrument has been supported and proven over almost a decade of testing and using the instrument by

several researchers. Additionally, field test results for this study supported the face and content validity of this research instrument as reported in the instrument verification section below. Using Cronbach's alpha and inter-item Pearson correlation to test for reliability, Cronbach's alpha scores for previous use of the SAM instrument reported reliability scores of between 0.66 and 0.995. Construct validity and reliability scores are examined from Yayla (2008), Dorociak (2007), Luftman & Kempaiah (2007), Nash (2006), Sledgianowski and Luftman (2005) and Luftman (2003). This research study also tested for reliability and constructs validity and presents the Cronbach's alpha scores for the full study as reported in chapter four.

Structure of Questionnaire

Questionnaire (see Appendix E) was grouped in three major parts. Part one requested data about participants' demographics. Part two of the instrument sort data about participants' organization's IT governance structural choice and IT governance practices. Part three and sub sections requested data about participants IT strategic alignment processes, practices and maturity level in their organizations. IT strategic alignment process is an ordinal variable while IT governance is a nominal variable arranged in ascending Likert scale order corresponding to five numeric scale responses from 1 to 5. 5 indicate the highest agreement and 1 indicate the lowest agreement. A zero value indicates a *non response, N/A or don't know* as the last response in each question. The construct IT governance contained nominal data and was be measured by questions 10 to 18 and IT strategic alignment contained ordinal data and was measured by questions 19 to 48 (see Appendix E). Responses to both constructs were Likert scale responses as described in this

section. Statistical analysis for all construct such as ANOVA is described in the data analysis section below.

Participant's response requirement for questionnaire was such that respondents had to select from levels of measurement. Fowler (2009) denotes that collecting survey data usually takes the form of asking respondents to answer in ways that allows for the researcher to analyze data. Furthermore, Templeton, Lewis and Snyder (2002) discusses that when questions are asked with specific response scales, the unit of analysis are easily verifiable. Therefore, respondents were asked to answer closed ended questions using 5 point Likert scaled. Each answer required that a box is checked. Each response box corresponded to five numeric scale responses from 5 to 1 in which 5 indicated the highest agreement and 1 indicated the lowest agreement. All answers that required that a box is check were arranged in ascending Likert-scale order which resulted in the survey collecting a value of 1 through 5 for the answer. Additionally, the check-box questions also included *other*, *N/A* or *do not know* answers indicating a value of negative 1, 6 or a zero respectively. Table 1 shows an example of the instruments question where the first response indicate a value of 1 and the fifth response signify a value of 5, and N/A or don't know a value of 6. Participants in taking this survey were instructed to select only one answer per question. Additionally, the instrument was up loaded into the online survey system in such a way that participants could only select one answer.

Table 1.

Example of Research Instrument Question

21. To what extent does IT understand the organization's business environment (e.g., its customers, competitors, processes, partners/alliances):

- Senior and mid-level IT managers do not understand the business.
 - Senior and mid-level IT managers have a limited understanding of the business.
 - Senior and mid-level IT managers have a good understanding of the business.
 - Understanding of the business by all IT members is encouraged and promoted by senior managers.
 - Understanding of the business is required (e.g., tied to performance appraisals) throughout the IT function.
 - N/A or don't know
-

An exception to the Likert scale used by Luftman (2003) was that three instances in the demographic section of the instrument required that participant's type in a textual respond for questions such as participants responsibility (business or IT), who they reported to in the organization such as CIO to CFO or to CEO.

Field Test (Instrument Verification)

While the research instrument has been adapted by several researchers and has been deemed valid and reliable, the investigator field tested the instrument by distributing to select professionals and academics that were able to assess the adequacy of the instrument as well as provide relevant feedback regarding the quality of the instrument in testing the hypothesis of this research. Appendix D provides information on the instrument validation form distributed to the panel. This process of instrument validation was necessary because the instrument content validity may have been insufficient for this study. The instrument was distributed to the panel through e-mail. Each panel member selected had a Doctor of Philosophy degree in business and or technology with over five years of business and or

technology experience. Each six panel member reviewed the instrument to ensure that the instrument was able to measure what it purported to measure and whether the measurement aligns with the research questions and hypothesis. All six panel members provided sufficient comments to strengthen the instrument. Five out of six experts concluded that the instrument was able to answer research questions and adequately address the study's hypothesis. The final instrument is depicted in appendix E.

Research Method

Swanson and Holton (2005) discussed the criteria for choosing one methodology over another within the philosophical orientations and states that content consideration brought about by literature reviews, observations, processes or outcomes that lead to a research problem and question defines the appropriate methodology to be used for a research. Therefore, a literature review that led to the identification of theories requiring testing and the need to explore the relationship or causality between IT strategic alignment and IT governance as missing from literature justified a quantitative approach to this research. Walker (2005), Creswell (2003) and Sogunro (2002) add that quantitative research design derives its strength in the ability to explore relations among variables. The appropriate instrument chosen also ensured the overall validity of this study.

A non-experimental correlational quantitative methodology was used to explore the extent to which causal relationships exist. Therefore, correlational quantitative design determined the relationship between variables without inferring causation. According to Walker (2005), strengths found in correlational quantitative design are the links that are established as a result of strongly tested hypothesis. When existing validated instruments are used, variables or concepts measures often lead to a provable conclusion due to a negative

or positive outcome. Consequently, correlational design strengths lies in the research questions and hypothesis, the research instrument and its alignment with variables that are clear, understandable and can be measured and tested. Therefore, the research methodology considered the relationship between IT governance structures of centralized, decentralized and federal and IT strategic alignment. To enable relationship measurements between IT strategic alignment and IT governance, the organizations alignment practices, decision making, processes, competence, IT and business partnerships and skills that drives business goals and objectives for competitive advantage became the factors affecting the relationship in a positive or negative way. An assessment of variables to be measured in a correlational design method suggests that variables measured were quantifiable based on analytical tools. Swanson and Holton (2005) add that "variables should be of some interest in an attempt to discover other variables that may explain the difference in order to infer causality" (p. 32). In other words, the relationship between variables should be such that the action of one variable should have a cause or effect on another variable for the positive or negative outcome of tested hypothesis.

Data Collection

Data collection took the form of using an existing survey instrument. The instrument was distributed through e-mail to participants. The e-mail included an introductory letter, an informed consent form and a link to the research questionnaire (instrument) after approval to conduct research was granted through the Internal Review Board (IRB).

Participants were selected based on their profession and respective industries. All participants were registered on an online research administrative service. Through the web-based survey link, participants were able to view the informed consent form and had the

option of opting out of the survey or a check box agreeing to participate in the survey. The process of agreeing to participate in the survey also meant participants had to read an informed consent form.

A web-based survey hosting service was used to administer and collect the results of the survey questionnaire for analysis. Participants from five industries were targeted as described in the population sample section above. The strength of this collection method was that the target population participants identified are technology savvy and had access to the internet. However, a limitation to this collection method was that majority of participants are often too busy, travel on the job and may be on vacation or may have left the position from which the survey registration service identified. All data collected were coded, labeled and uploaded into SPSS statistical application for analysis. To ensure confidentiality, instrument and survey response are removed from the online hosting service at the close of the survey.

Data Analysis

The data collected through the administration of the research survey were categorized into distinctive sets of data that aligned with variables in the research. Prior to loading questionnaire into the online survey system, all possible responses were coded as described in the instrument section from 0, 1 to 5 and 6 denoting a filled in answer to allow for transfer into a statistical application. The distinctive sets of data aligned with questionnaire sections as described in the instrument section. Specific statistical techniques were used to analyze data collected. A Cronbach's alpha score was ascertained to assess the reliability of the survey instrument. A statistical technique such as independent sample and paired t-test was used to compare means. Other techniques such as Chi Square tests,

Kruskal-Wallis or Friedman's Test with a significance level of 0.05 to assess adequacy of response rate and those falling into specific groups were be computed. Additionally, Cross tabulation were performed to determine combinations of values for two or more variables.

Statistical analysis using factor analyses was utilized to explore the variation present in the variables. The result of this test provided information about the statistical significance of the differences among the mean scores of multiple groups of variables (Swanson & Holton, 2005). Multiple Regression procedure examined the relationship between the dependent variable and multiple independent variables. Furthermore, correlating variable procedures was used to provide measures of association for two or more numeric variables. Participant's demographic data was analyzed through descriptive statistics to highlight possible patterns or traits among study participants that may further help explain the findings and or phenomenon. Several statistical tables used to analyze research data in the form of columns and graphs that identify the independent variables, dependent variable, and their relationships are presented in chapter four.

Validity and Reliability

Exploring the reliability and validity of scales within the survey is found in the quality of the measurement of the constructs. The instrument has been tested and used by several prominent researchers in producing reliable research that were deemed credible. The instrument is a SAM instrument from Luftman (2003) which is adapted without modifications. Permission was granted for use of the instrument (see Appendix B). Evidence of the instruments validity and reliability is depicted in the research work of several IT strategic alignment researchers (Luftman, 2000; Sledgianowski & Luftman, 2005; Luftman,

2005; Nash, 2006; Dorociak, 2007). Creswell (2003) wrote that the art of convincing a research audience that a study is valid and supported by empirical research or observation is grounded in inquiry discipline and constitutes scientific research or knowledge creation. A defined research methodology that uses a tested instrument with an acceptable population sample and meets ethical considerations stands to be valid and reliable.

While the instrument had previously been tested and deemed a valid and reliable construct, there are possible problems with online surveys. The possible problems are often a result of duplicate entries by participants. Therefore, filters were built into the online survey to allow for only one choice per question. To minimize bias from participants' random choices, the first page of the instrument presented participants with the IRB approval, informed consent form and adequate instructions. Furthermore, participants' registration into the online survey system allowed for the filtering of duplicate entries and or multiple answering of previously completed forms. Additionally, this process of ensuring validity and reliability and reducing duplicate entries was perfected through the field testing of the instrument. Capella University (2008) writes that the concepts of validity and reliability have different meaning depending on a study's overall research design. This studies research design incorporates mechanisms such as the adoption of previously tested instrument, sample size, survey type and so forth that increased the reliability and validity of the research design. According to Trochim (2006), research report that meets scientific merit ensures that data validity and reliability are found in the quality of the measurements. In other words, it is the intermediary and methodological processes that drive a valid and reliable research.

Ethical Considerations

Respondents received a link through an e-mail to participate in an online survey. The link included an IRB approval and informed consent form. The informed consent form also included the purpose of the study and instructions for responding to the survey. The instructions also provided clear definitions of constructs at the beginning of the questionnaire. Fowler (2009) writes that the basic principle behind ethical research is that participants should know what they are signing up for and be given the choice to opt in or out as they wish. In other words, there is no force or coercion and participation is voluntary, the sample is random and participants should not be affected in any way. Swanson and Holton (2005) add that participants should be respected and given enough information for which the decision to participate is based upon.

Participants for the research did not have to give names or specific personal information such as race, religion, imprisonment, sexual orientation and such questions are not requested for this study. Participants received an introduction that explained the purpose of the study and the confidentiality built into the survey. The informed consent form explained ethical considerations and assurance of confidentiality, privacy, and anonymity to all participants. Possible potential risk was that upon approval and publishing of the research, the scientific and technical information (STI) obtained was analyzed and findings published to the general public. Therefore, while confidentiality and anonymity was assured and no personal information included in the findings of the study prior to publication, certain sensitive information such as organizational strategies and processes may be disseminated. However, organizational names would not be included as organizational names were not asked in the questionnaire.

The University's IRB assessed and approved the research design for the purposes of safeguarding research participant. The IRB provides the mechanism from which to protect research participants in order to maintain a high ethical standard of academic research. Swanson and Holton (2005) discusses that the ethical conduct built into a research that encompasses the research design, data analysis and reporting findings essentially drives how a research is judged for effectiveness. An example of building safeguards into this research study was that potential risk to research participants such as personal information were assessed and eliminated to ensure that the potential benefits outweigh the risks sufficiently enough to justify conducting the study.

Summary

This research methodology chapter described the exploratory research process of investigating the correlation between IT strategic alignment and IT governance. The use of an online survey service prescribed the need to conduct a field test to ensure the adequacy of the instrument. The indebt methodology presented provided future researchers a road map from which to further research in this topic area.

CHAPTER 4. RESULTS

Introduction

This chapter presents a nonevaluative reporting of the data collected and analyzed. Evaluating the research data is captured in chapter 5. This reporting is supported by quantitative statistical tables and figures as the most efficient and effective way of communicating the research data.

The purpose and objective of this quantitative correlational study was to explore the extent to which Information Technology (IT) strategic alignment are impacted by IT governance structural elements and an IT governance framework (Luftman, 2003; Luftman & Kempaiah, 2007 & Peterson, 2004). The study focused on IT strategic alignment relationship with IT governance. The second purpose was to determine the degree of impacts that may exist between the variables.

Actual Data Collection Summary

The quantitative data collected and analyzed as presented below in this chapter came from business and technology management professionals who have knowledge of their organization's IT strategic alignment and IT governance and are part of the decision making process, creating and or maintaining these processes. This is evident as over 62 percent of the 300 participants who responded reported over 16 years of experience in IT, business and IT governance as shown in Table 6 below. Participants were required to be IT and or business decision makers in some capacity from middle management to executives.

As described in the (study methodology), participants responses were exported from the online survey site into SPSS version 16.0 statistical application. The raw data was

cleaned, labeled and coded. Following were descriptive statistics, Cronbach's alpha for reliability, cross tabulation in testing the hypothesis for assessing correlations. Furthermore, factor analyses and multiple regressions while not directly associated with the assessment of hypothesis and correlations tested for relationships between multiple groups of variables that are sub-categories of the main variables IT governance and IT strategic alignment. Such further analysis provided in-depth look at the phenomenon surrounding the relationship between IT strategic alignment and IT governance. Reasons for these specific statistical procedures were detailed in the data analysis section of chapter 3.

Data Analysis and Results

This section presents a nonevaluative reporting of the research data analysis and results. Results of the study are organized into three sections. The first section provides a description (descriptive statistics) of the sample utilized in the study. The second section addresses the four research questions and hypothesis concerning IT governance and strategic alignment. The final section of the chapter presents findings from a factor analysis of a broad range of organizational characteristics, as well as correlation and regression analyses relating these organizational dimensions to strategic alignment.

Descriptive Statistics

The following descriptive statistics reports on the population demographic of participants who responded to the survey (see Tables 2 to 11). Such descriptive report allows for an assessment of the raw data as computed in mean, median, standard deviation, frequency and percentiles. While descriptive statistics were computed for all demographic responses, only participant age group, organizational department, education level, career

level, industry and years of experience that justifies participants demographic as adequate population sample are included in this section. Furthermore, descriptive statistics of participants levels of IT strategic alignment maturity and IT governance structures are depicted within the correlational statistics. Additional descriptive statistics such as distance from CEO, number of employees in the organization and total employees in IT department are reported in appendix F.

Table 2:

Descriptive statistics of participants Age Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 < 25	2	0.7	0.7	0.7
	2 25 - 35	36	12.0	12.0	12.7
	3 35 - 45	64	21.3	21.3	34.0
	4 45 - 55	106	35.3	35.3	69.3
	5 > 55	92	30.7	30.7	100.0
	Total	300	100.0	100.0	

Descriptive statistics shown on tables 2 above depict participants' age demographics which help to identify with population group and research sample. At a reported median of 4.00 table F1 (See appendix F), respondents between the ages of 45-55 accounted for 35.3 percent of total respondents making it 106 out of the total 300 respondents. Additionally, table 3 below shows respondents' organizational department as adequate for the study. This is evident as 23.0 and 21.3 percent presented business and IT departments respectively while the remaining 45 percent came from finance, human resource, corporate and other small departments showing the diverse background of respondents representing organizations in this study. Additionally, table F2 reported median of 3.0 which identifies

that respondents had education level of bachelors (41.7 percent) and 31 percent for those with masters degrees and above as indicated on table 4.

Table 3:

Frequency and percentages of participants Organizational Department

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-1 Other, please specify	64	21.3	21.3	21.3
	1 Business Unit (BU)	69	23.0	23.0	44.3
	2 IT	64	21.3	21.3	65.7
	3 Finance	44	14.7	14.7	80.3
	4 HR	15	5.0	5.0	85.3
	5 Corporate	44	14.7	14.7	100.0
	Total	300	100.0	100.0	

Table 4:

Frequency and percentages of participants Education Level (Highest Level Completed)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-1 Other, please specify	1	0.3	0.3	0.3
	1 GED/High School	12	4.0	4.0	4.3
	2 Some College	66	22.0	22.0	26.3
	3 Bachelors Degree	125	41.7	41.7	68.0
	4 MBA/Masters	72	24.0	24.0	92.0
	5 Post Masters	12	4.0	4.0	96.0
	6 Ph.D / Doctorate	7	2.3	2.3	98.3
	7 Post Doctorate	5	1.7	1.7	100.0
	Total	300	100.0	100.0	

Table 5:

Frequency and percentages of participants career level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-1 Other, please specify	20	6.7	6.7	6.7
	1 Entry Level	3	1.0	1.0	7.7
	2 Staff	48	16.0	16.0	23.7
	3 Supervisor	30	10.0	10.0	33.7
	4 Manager	71	23.7	23.7	57.3
	5 Mid Level Manager	46	15.3	15.3	72.7
	6 Executive	50	16.7	16.7	89.3
	7 Senior Manager	32	10.7	10.7	100.0
	Total	300	100.0	100.0	

Table 6:

Frequency and percentages of participants Years of Relevant Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Less than 3 years	10	3.3	3.3	3.3
	2 3 - 5 years	18	6.0	6.0	9.3
	3 6 - 10 years	39	13.0	13.0	22.3
	4 11 - 15 years	45	15.0	15.0	37.3
	5 16 - 25 years	82	27.3	27.3	64.7
	6 More than 25 years	106	35.3	35.3	100.0
	Total	300	100.0	100.0	

Tables 5 and 6 above identifies respondents' career levels and years of relevant industry experience while table 7 below identifies specific industries represented by respondents. The descriptive tables identifies the research data reported to come from business and technology management professionals who have knowledge of their organization's IT strategic alignment and IT governance and are part of creating and or

maintaining these processes. This is evident as data reported in table 5 and F3 shows a median of 4.0 with majority of respondent as managers to executives accounting for 55.7 percent of respondents. Tables 6 and F4 depict a median of 5.0 for years of relevant industry experience corresponding to 16 to more than 25 years accounting for 62.5 percent of respondents. Additionally, table 7 shows the highest frequency representing the Finance, Banking and Insurance industry at 33.0 percent. However, population sample from Healthcare/Medical and Biotech were poorly represented at 1.3 and 1.0 respectively. On the other hand, Government/Military, Manufacturing, and Telecommunications were well represented at 26.0, 29.0 and 5.3 percent respectively.

Table 7:

Frequency and percentages of participants Industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other, please specify	13	4.3	4.3	4.3
	Government/Military	78	26.0	26.0	30.3
	Finance/Banking/Insurance	99	33.0	33.0	63.3
	Manufacturing	87	29.0	29.0	92.3
	Healthcare/Medical	4	1.3	1.3	93.7
	Biotech	3	1.0	1.0	94.7
	Telecommunications	16	5.3	5.3	100.0
	Total	300	100.0	100.0	

Table 8:

Chi Square Test of Participants Industry

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.003 ^a	12	.703
Likelihood Ratio	10.197	12	.599
Linear-by-Linear Association	.073	1	.787
N of Valid Cases	209		

a. 11 cells (52.4%) have expected count less than 5. The minimum expected count is .35.

Table 9:

Descriptive Statistics (Frequency) of Participants IT Governance (Organizational) Structures

IT Governance (Organizational) Structures					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Centralized	130	43.3	62.2	62.2
	Decentralized	42	14.0	20.1	82.3
	Federated	37	12.3	17.7	100.0
	Total	209	69.7	100.0	
Missing	N/A or don't know	91	30.3		
Total		300	100.0		

Table 10:

Descriptive Statistics (Frequency) of Participants IT Strategic Alignment Maturity

		IT Strategic Alignment Maturity			Valid	Cumulative
		Frequency	Percent	Percent	Percent	Percent
Valid	Level 1 Initial/ad-hoc process	47	15.7	15.7	15.7	
	Level 2 Committed process	66	22.0	22.0	37.7	
	Level 3 Established focused process	90	30.0	30.0	67.7	
	Level 4 Improved/managed process	63	21.0	21.0	88.7	
	Level 5 Optimized process	34	11.3	11.3	100.0	
Total		300	100.0	100.0		

Organizations choice of IT governance structure as it aligns with IT strategic alignment is the focus of this study. Therefore, tables 9 and 10 descriptive statistics is critical to understanding what governance structures and strategic alignment practiced within respondents organizations. Table 9 reports 43.3 percent (130 respondents' organizations) are practicing a centralized IT governance structure compared to 14.0 percent (42 respondents) for decentralized and 12.3 percent (37 respondents) for federal. Out of the 300 respondents, 91 respondents (30.3 percent) did not know the IT governance structure of their organization or whether IT governance was not in practice except decision making. On the other hand, table 10 reports that 30.0 percent of (90 respondents) organizations were at level 3 of the IT alignment maturity process. The remaining of the total 300 responses were at 15.7 percent for level 1, 22.0 percent for level 2, 21.0 percent for level 4 and 11.3 percent for level 5. Chapter 5 will discuss and evaluate the implications and assumptions of this reporting.

Table 11:

Descriptive Statistics (Frequency) of Participants Organizational IT Decision Makers

		43: Organizational IT Decision Makers			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Top business management or IT management at the corporate level only	41	13.7	20.6	20.6
	Top business or IT management at corporate level with emerging functional unit level influence	44	14.7	22.1	42.7
	Top business management at corporate and functional unit levels, with emerging shared influence from IT management	48	16.0	24.1	66.8
	Top management (business and IT) across the organization and emerging influence from our business partners/alliances	44	14.7	22.1	88.9
	Top management across the organization with equal influence from our business partners/alliances	22	7.3	11.1	100.0
	Total	199	66.3	100.0	
Missing	6 N/A or don't know	101	33.7		
Total		300	100.0		

A 66.3 percent of respondent as identified in table 11 above new who made IT decisions in their organizations. The highest percentage IT decisions made in respondents organizations are made by top business management at corporate and functional unit levels, with emerging shared influence from IT management accounting for 16 percent. While 33.7 percent of respondent did not know who made IT decisions in their organizations.

IT Governance and IT Strategic Alignment

This section presents the results of the analyses examining the relationship between IT governance and strategic alignment. Specifically, four research questions and hypothesis were addressed. Statistical analyses were performed to determine combinations of values for each of the four hypotheses for this study. Each statistical analysis computed to answer each research questions and hypothesis presented a conclusive finding of the study. Each statistical analysis identifies with a particular hypothesis as labeled within each table below. Additional Crosstabulation that details computation of the findings are presented and labeled in Appendix G.

Research Question and Hypothesis 1

Does a correlation exist between IT strategic alignment and IT governance?

H1o: (Null) There is no correlation between IT strategic alignment and IT governance.

H1a: There is a positive correlation between IT strategic alignment and IT governance.

The first research question and hypothesis seek to explore whether a relationship exist between IT strategic alignment and IT governance structures. Because IT strategic alignment was measured on an ordinal scale, and IT governance was measured on a nominal scale, the Kruskal-Wallis non-parametric test was appropriate (see Table 12). The Kruskal Wallis procedure tests the null hypothesis that the ranks (distribution of population respondents) of answers on the ordinal measure (IT Strategic Alignment) are equal across levels of the nominal variable (IT Governance). The alternative hypothesis in the Kruskal-Wallis test states that the ranks of answers on the ordinal variable differ between levels of the nominal variable. The Kruskal-Wallis test is more powerful than the Chi-Square

contingency test because the Kruskal-Wallis focuses specifically on testing equality in ranks on an ordinal measure, instead of treating the ordinal measure as though it were merely nominal. The cross-tabulation (see tables G1, Appendix G) of IT strategic alignment and IT governance structures is shown in Table 12. The Kruskal-Wallis test revealed significant differences in Strategic Alignment between different categories of IT Governance (Chi-Square (2) = 11.319; $p < .01$). This finding supports the rejection of the Null Hypothesis in favor of the alternate hypothesis that IT strategic alignment is associated with IT governance structures.

Table 12:

IT Strategic Alignment and IT Governance

IT Strategic Alignment	IT Governance						
	Centralized		Decentralized		Federated		
	n	%	n	%	n	%	
Level 1: Ad-Hoc Process	14	11%	6	14%	0	0%	
Level 2: Committed Process	34	26%	10	24%	5	14%	
Level 3: Established Process	37	29%	17	41%	13	35%	
Level 4: Improved Process	31	24%	8	19%	12	32%	
Level 5: Optimal Process	14	11%	1	2%	7	19%	
Total	130	100%	42	100%	37	100%	

Ranks			
Levels of IT strategic alignment maturity	IT Governance (Organizational) structures		Mean Rank
	N		
Centralized	130	102.22	
Decentralized	42	89.49	
Federated	37	132.36	
Total	209		

Test Statistics ^{a,b}	
Levels of IT strategic alignment maturity	
Chi-Square	11.319
df	2
Asymp. Sig.	.003

a. Kruskal Wallis Test

b. Grouping Variable: v18 Question 12: IT Governance (Organizational) structures

Analyses that address research questions two, three, and four more clearly delineate where and how organizations with Centralized, Decentralized, and Federated IT governance structures differ with respect to IT strategic alignment.

Research Question and Hypothesis 2

To what extent is there a correlation between IT strategic alignment and Centralized IT governance structure?

H2₀: (Null) There is no correlation between IT strategic alignment and Centralized IT governance structure.

H2_a: There is a positive correlation between IT strategic alignment and Centralized IT governance structure.

The second research question and hypothesis sort to explore the extent to which correlation existed between IT strategic alignment and Centralized IT governance Structure. To address this question, responses on the IT Governance item were classified according to whether they indicated a Centralized versus a Non-Centralized (for example, Decentralized or Federated) structure. Since the study is comparing the rankings of an ordinal variable between the two levels of a dichotomous variable, the Mann-Whitney U was applied. Specifically, the Mann-Whitney U test was employed to test the null hypothesis that IT strategic alignment is not associated with Centralized IT governance structure by assessing whether the ranks of answers to the ordinal IT strategic alignment item were equal for participants who stated that they worked in a centralized or non-centralized organization. The alternative hypothesis proposes that IT strategic alignment is associated with IT Centralization (in other words, that the ranks of answers to the IT Strategic Alignment item

are different for centralized and non-centralized organizations). The tabulation of IT strategic alignment and Centralization is shown in Table 13. The value of the Mann-Whitney U-test was 4,774, which did not attain statistical significance at the .05 level. These findings do not support the rejection of the null hypothesis. Instead the null hypothesis of no association between centralized IT governance and IT strategic alignment is retained.

Table 13:

IT Strategic Alignment and Centralization IT Governance Structure

IT Strategic Alignment	IT Governance			
	Centralized		Non-Centralized	
	n	%	n	%
Level 1: Ad-Hoc Process	14	11%	6	8%
Level 2: Committed Process	34	26%	15	19%
Level 3: Established Process	37	29%	30	38%
Level 4: Improved Process	31	24%	20	25%
Level 5: Optimal Process	14	11%	8	10%
Total	130	100%	79	100%

	Ranks		
	Centralized IT Governance	N	Mean Rank
Levels of IT strategic alignment maturity	.00 No	79	109.57
	1.00 Yes	130	102.22
	Total	209	

Test Statistics ^a	
	Levels of IT strategic alignment maturity
Mann-Whitney U	4774.000
Wilcoxon W	13289.000
Z	-.879
Asymp. Sig. (2-tailed)	.379

a. Grouping Variable: Centralized IT Governance

Research Question and Hypothesis 3

To what extent is there a correlation between IT strategic alignment and Decentralized IT governance structure?

H3₀: (Null) There is no correlation between IT strategic alignment and Decentralized IT governance structure.

H3_a: There is a positive correlation between IT strategic alignment and Decentralized IT governance structure

The third research question and hypothesis sort whether there is a correlation between IT strategic alignment and Decentralized IT governance structure. To address this question, responses on the IT Governance item were classified according to whether they indicated a Decentralized versus Other (for example, Centralized or Federated) structure. The Mann-Whitney U test was employed to test the null hypothesis that IT strategic alignment is not associated with Decentralization against the alternative hypothesis that IT strategic alignment is associated with IT Decentralization. The tabulation of IT strategic alignment and Decentralization is shown in Table 14 with detailed crosstabulation shown in Table G3 (Appendix G). The value of the U-test was 2,855, which barely failed to attain statistical significance at the .05 level. The p-value for this analysis was .055. These findings do not support the rejection of the null hypothesis. Instead the null hypothesis of no association between decentralization and IT strategic alignment is retained.

Table 14:

IT Strategic Alignment and Decentralization IT Governance Structure

IT Strategic Alignment	IT Governance			
	Decentralized		Not Decentralized	
	n	%	n	%
Level 1: Ad-Hoc Process	6	14%	14	8%
Level 2: Committed Process	10	24%	39	23%
Level 3: Established Process	17	41%	50	30%
Level 4: Improved Process	8	19%	43	26%
Level 5: Optimal Process	1	2%	21	13%
Total	42	100%	167	100%

Ranks				
Decentralized IT Governance		N	Mean Rank	Sum of Ranks
Levels of IT strategic alignment maturity	.00 No	167	108.90	18186.50
	1.00 Yes	42	89.49	3758.50
	Total	209		

Test Statistics ^a	
Levels of IT strategic alignment maturity	
Mann-Whitney U	2855.500
Wilcoxon W	3758.500
Z	-1.920
Asymp. Sig. (2-tailed)	.055

a. Grouping Variable: Decentralized IT Governance

Research Question and Hypothesis 4

Does a correlation exist between IT strategic alignment and Federal IT governance structure?

H4₀: (Null) There is no correlation between IT strategic alignment and Federal IT governance structure.

H4_a: There is a positive correlation between IT strategic alignment and Federal IT governance structure.

The fourth research question and hypothesis asked if a correlation exist between IT Strategic Alignment and Federal IT governance structure. To address this question, responses on the IT governance item were classified according to whether they indicated a Federated versus non-Federated structure. The U-test was employed to test the null hypothesis that IT strategic alignment is not associated with a Federated structure against the alternative hypothesis that IT strategic alignment is associated with Federal IT governance structure. The tabulation of IT strategic alignment and Federalized IT governance structure is shown in Table 15 with detailed Crosstabulation shown in Table G4 (Appendix G). The value of the U-test was 2,169.5, which attained statistical significance at the .01 level. These findings support the rejection of the null hypothesis in favor of the alternative hypothesis that IT strategic alignment differs between Federated and non-Federated organizations. Inspection of the distribution of Strategic Alignment ratings indicates that levels of IT strategic alignment are higher when IT Governance is Federalized. Illustratively, 51% of the respondents who indicated that IT management was Federated also

indicated that IT strategic alignment was “Improved” or “Optimal”, compared with only 32% of the respondents who indicated that IT Governance was not Federated.

Table 15:

IT Strategic Alignment and Federal IT Governance Structure

IT Strategic Alignment	n	IT Governance		
		Federated	non-Federated	
	n	%	n	%
Level 1: Ad-Hoc Process	0	0%	20	12%
Level 2: Committed Process	5	14%	44	26%
Level 3: Established Process	13	35%	54	31%
Level 4: Improved Process	12	32%	39	23%
Level 5: Optimal Process	7	19%	15	9%
Total	37	100%	172	100%

Levels of IT strategic alignment maturity	Ranks		
	Federalized IT Governance	N	Mean Rank
.00 No		172	99.11
1.00 Yes		37	132.36
Total		209	

Test Statistics ^a	
	IT strategic alignment maturity
Mann-Whitney U	2169.500
Wilcoxon W	17047.500
Z	-3.133
Asymp. Sig. (2-tailed)	.002

a. Grouping Variable: Federalized IT Governance

Organizational Characteristics and IT Strategic Alignment

The final phase of data analysis examined the relationship between a broad range of organizational characteristics and IT strategic alignment. The data gathered from the literature review indicated that there were several factors that may influence, enable or inhibit the relationship between IT strategic alignment and IT governance. The researcher carried out a separate factor analysis for the items in each section. Factor analyze for section 1 of the survey was not computed because it consists of demographic items. Additionally, IT strategic alignment as dependent variable represented the predictors in the factor analysis. This stage of the investigation proceeded in three sections. First, in order to examine relationships between the many organizational characteristics assessed in this survey and IT strategic alignment, it is necessary to condense the information contained in multiple sections of the survey into a smaller number of reliable composite scores. To accomplish this goal, each section of the survey underwent exploratory factor analysis to determine the number and structure of the dimensions underlying participant's ratings. Next, scales were constructed for each section based on the results of the factor analysis, and the internal consistency of these scales was assessed. Finally, these scales were employed to predict levels of IT strategic alignment using correlation and regression. Analyses examined the factor structure and predictive power of variables in the following sections of the survey:

Part 2: Governance Structure

PART 3: IT Strategic Alignment

PART 3 Section 1: Effectiveness of IT

PART 3 Section 2: Competency and Value of IT

PART 3 Section 3: Partnerships with IT

Factor Analysis

The first critical decision to make in any factor analysis concerns the number of factors to retain for analysis. In this study, Cattell's scree criterion (Cattell, 1966) was employed to select the number of factors, Cattell's scree criterion was chosen because it is not influenced by the number of items in the test battery, and it tends to select the correct number of factors in simulation studies. The essential principal in the scree criterion is that eigenvalues for meaningful factors will be high relative to ones that reflect random covariation between items. When eigenvalues are plotted next to each other for successive factors, the size of the eigenvalues for spurious factors will decline in a linear model (resembling the scree at the foot of a mountain). For each section of the survey, the first result to be presented will be the plot of the eigenvalues, so Cattell's scree criterion can be used to select the number of factors. A recurring finding in these analyses is that Cattell's scree criterion indicates that the variance in each section of the survey has a one-dimensional structure. Immediately after each plot of eigenvalues comes a factor structure based on the number of factors indicated in the scree plot. The following scree plots and factor analysis component matrix present the factor analysis results for each section of the survey.

IT Governance Structure factor analysis

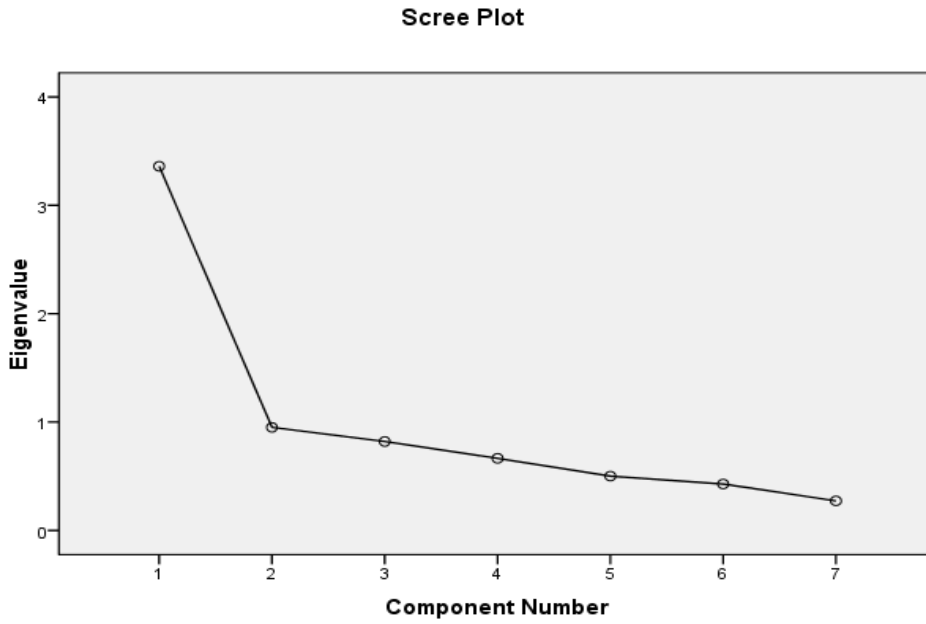


Figure 11: Factor analysis of IT Governance Structure

Table 16:

Factor analysis component matrix for IT governance structure

Component Matrix ^a	
	Component
	1
Formal IT strategic planning	.819
Formal Business Strategic Planning	.811
Senior level IT steering committee(s)	.781
How IT projects are prioritized	.762
Rational for IT investment decisions	.618
Rational for IT budgeting.	.493
IT response to changing business needs	.467

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

The scree plot for this section of the survey indicates a one-dimensional factor structure. When one factor is extracted, every item has a moderate to strong loading with the factor.

Communication Effectiveness

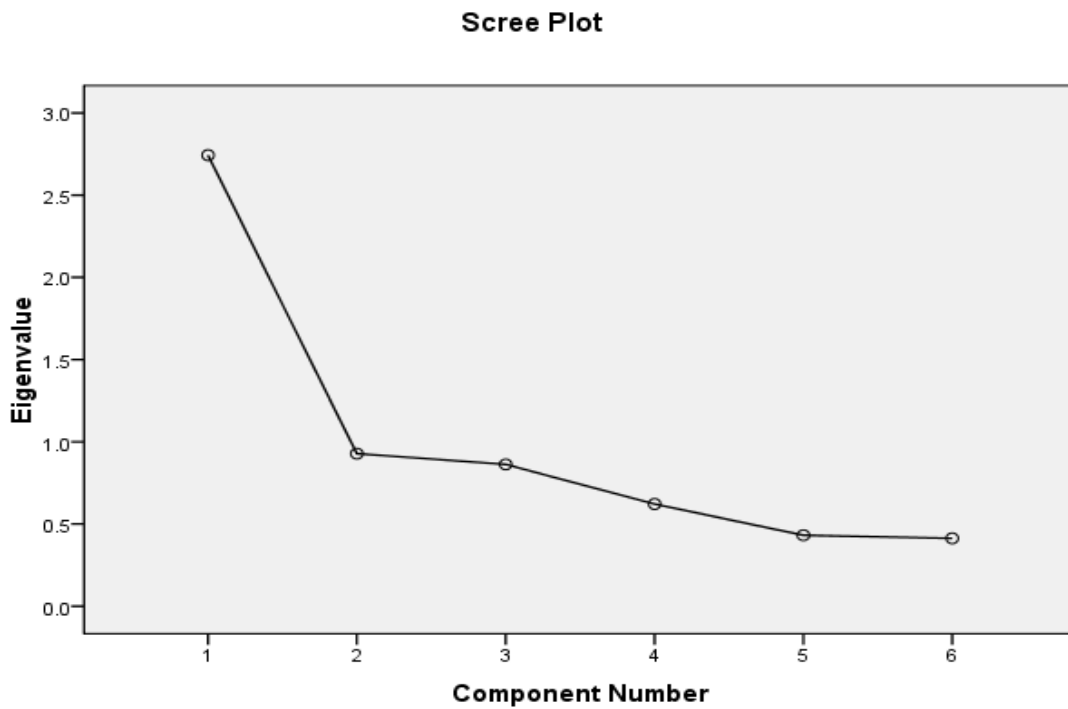


Figure 12: Scree plot for IT Strategic alignment communication effectiveness

Table 17:

Factor analysis component matrix for IT Strategic alignment communication effectiveness

Component Matrix ^a	
	Component
	1
Knowledge sharing between IT and Business	.782
Understanding of Business by IT	.746
Organizational learning	.700
Understanding of IT by Business	.689
Effectiveness of IT and business liaisons	.673
IT and business communication style	.396

Extraction Method: Principal Component Analysis.

a. 1 component extracted.

The scree plot for this section of the survey indicates a one-dimensional factor structure. When one factor is extracted, every item has a moderate to strong loading with the factor.

Competency and Value of IT

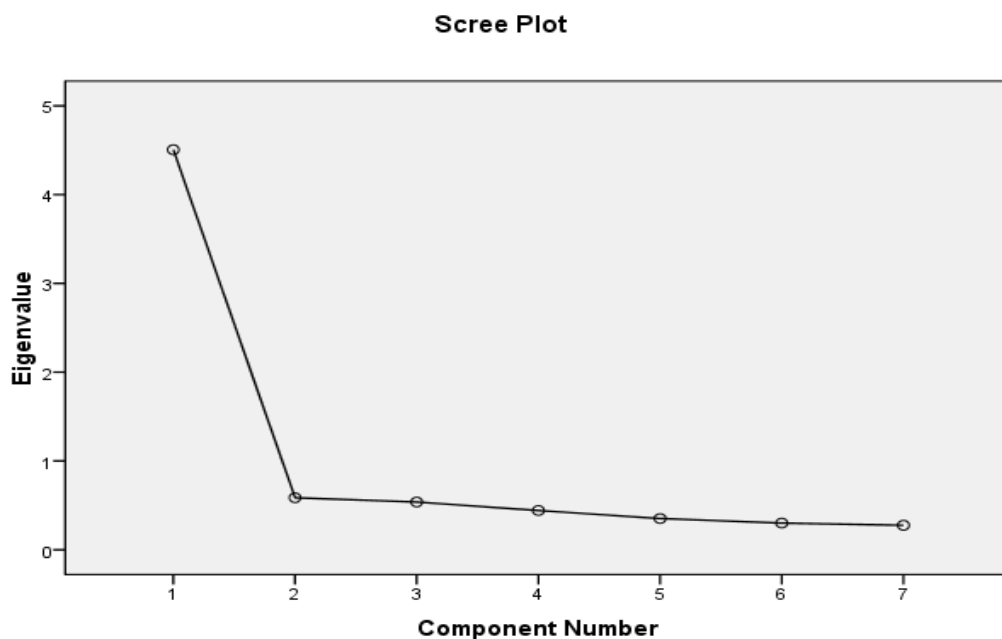


Figure 13: Scree plot for IT Strategic alignment competency and value of IT

Table 18:

Factor analysis component matrix for IT Strategic alignment competency and value of IT

Component Matrix ^a	
	Component
	1
Link between IT and business metrics	.850
Continuous improvement practices	.834
Assessment and review of IT investments	.814
Metrics to measure business contribution to the business	.805
Metrics and processes to measure IT's contribution to the business	.792
Benchmarking practices	.786
IT contribution to organization's strategic goals	.730

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

The scree plot for this section of the survey indicates a one-dimensional factor structure. When one factor is extracted, every item has a strong loading with the factor

Partnerships with IT

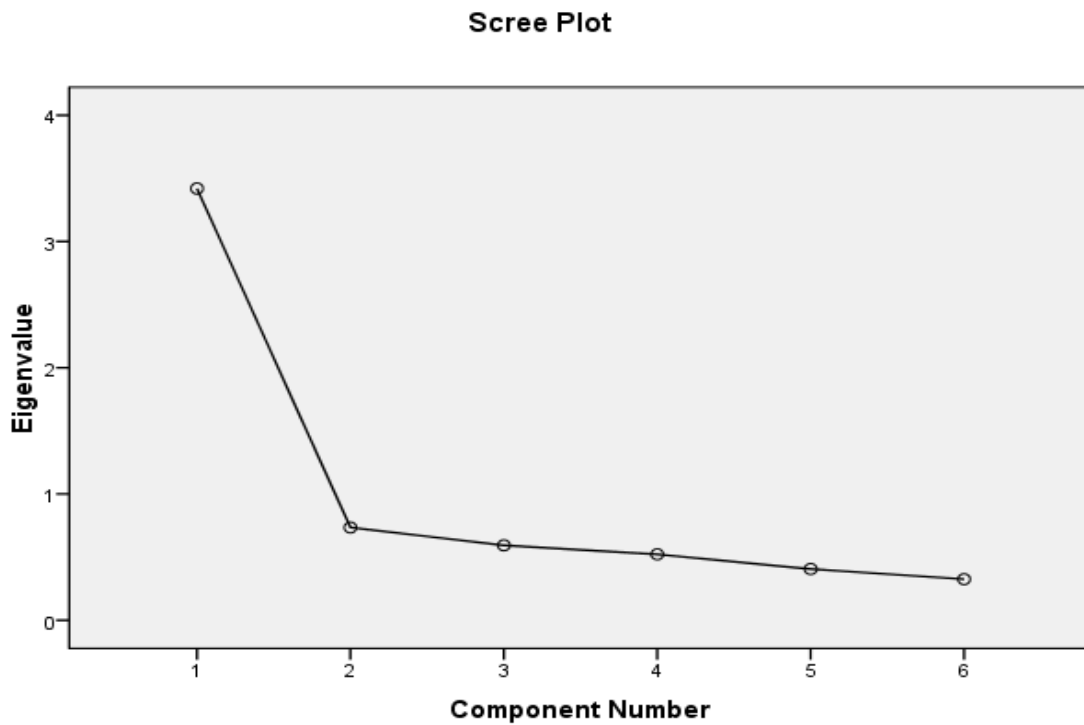


Figure 14: Scree plot for IT Strategic alignment business partnership with IT

Table 19:

Factor analysis component matrix for IT Strategic alignment business partnership with IT

Component Matrix ^a	
	Component
	1
Managing the IT/business relationship.	.811
Business perception of IT	.810
IT and business relationship and trust	.770
Role of IT in strategic business planning	.722
Sharing of the risks and rewards by IT and business management	.717
Business sponsors/champions	.691

Extraction Method: Principal Component Analysis.

a. 1 Components extracted.

The scree plot for this section of the survey indicates a one-dimensional factor structure. When one factor is extracted, every item has a strong loading with the factor.

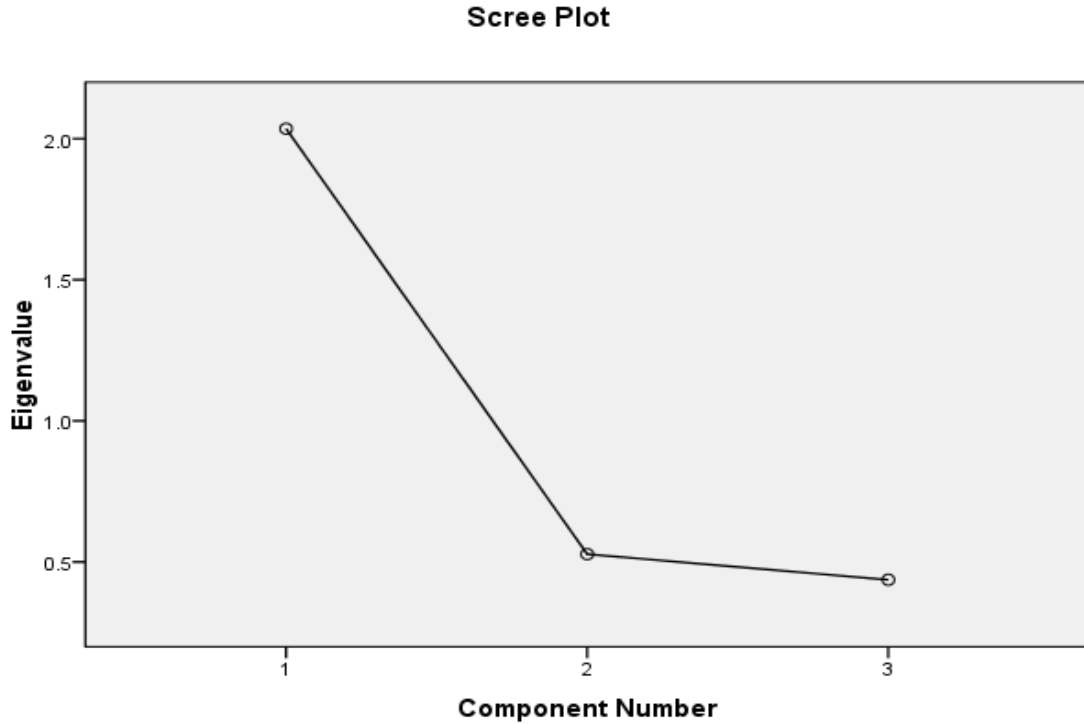


Figure 15: Scree plot of IT Strategic alignment organizational IT architecture

Table 20:

Factor analysis of IT Strategic alignment organizational IT architecture

Component Matrix^a	
	Component
	1
Perception of IT infrastructure	.847
Disruption caused by business and IT changes	.814
IT standards	.810

Extraction Method: Principal Component Analysis.

a. 1 component extracted.

The scree plot for this section of the survey indicates a one-dimensional factor structure. When one factor is extracted, every item has a strong loading with the factor.

Organizational Skills

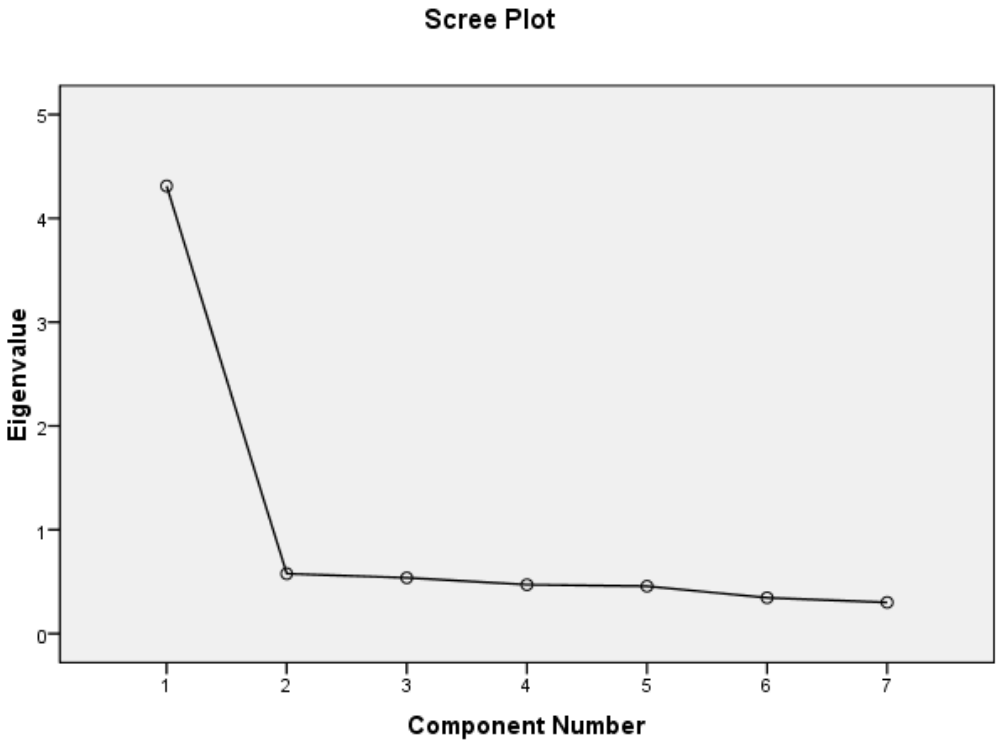


Figure 16: Scree plot of IT Strategic alignment Organizational skills

Table 21:

Factor analysis of IT Strategic alignment organizational skills

Component Matrix^a	
	Component
	1
Attract and retain top business and technical professionals	.820
Employee opportunities through continual learning	.804
interpersonal interaction	.791
Organization's readiness for change	.783
Career crossover opportunities among IT and business personnel	.769
Innovative entrepreneurial environment	.769
Cultural locus of power in making IT-based decisions	.755

Extraction Method: Principal Component Analysis.

a. 1 component extracted.

The scree plot for this section of the survey indicates a one-dimensional factor structure. When one factor is extracted, every item has a strong loading with the factor

Cronbach's alpha Scale Construction

The cumulative pattern of the factor analyses findings reports that the content covered by each section of the survey can be assessed by a single unitary dimension. Accordingly, scales were constructed to represent each section of the survey by a single overall score. In order to assess the internal consistency of these scales, Cronbach's alpha was computed. Values of the alpha coefficient are shown in Table 22. High levels of internal consistency ($\alpha > .8$) were obtained for the measures of IT Governance Structure and portions of IT Strategic Alignment consisting of Competency and Value of IT, Partnerships with IT, and Skills. Adequate levels of internal consistency ($\alpha > .7$) were

obtained for Effectiveness of IT and IT Architecture which completed IT Strategic Alignment consistency.

Table 22:

Internal Consistency of Scales (Cronbach's alpha)

Scale	Alpha
Governance Structure	.817
Effectiveness of IT	.751
Competency and Value of IT	.907
Partnerships with IT	.846
IT Architecture	.760
Skills	.895

Multiple Regression Analysis (Multivariate Prediction of IT Strategic Alignment)

In order to examine the association between organizational characteristics and strategic alignment, correlational and multiple regression analyses were conducted.

Correlations between each of the composite measures constructed above (for factor analysis) and strategic alignment are shown in Table 23.

Since so many organizational characteristics are associated with strategic alignment, a question arises as to which characteristics are uniquely associated with strategic alignment. What organizational characteristics make a contribution to strategic alignment that is independent of, and cannot be accounted for, the effects of other organizational characteristics? To address this question, strategic alignment was regressed onto all of the organizational composite measures. Multiple regression analysis was utilized to construct a

regression equation using all of the measures of organizational characteristics to predict strategic alignment. In this equation, significant beta weights indicate that the independent variable is making a unique contribution to the prediction of IT strategic alignment. The results of the regression are presented in Table 24 below.

Table 23:

Correlation of Composite Measures with Strategic Alignment

Scale	Correlation
Governance Structure	.533 ***
Effectiveness of IT	.596 ***
Competency and Value of IT	.625 ***
Partnerships with IT	.541 ***
IT Architecture	.549 ***
Skills	.511 ***

Note

*** $p < .001$

Table 24:

Regression of Composite Measures on Strategic Alignment

Scale	Beta	t	Significance
Governance Structure	.127	1.638	.103
Effectiveness of IT	.227	2.451	.015
Competency and Value of IT	.272	2.465	.015
Partnerships with IT	.006	.054	.957
IT Architecture	.139	1.547	.123
Skills	-.031	-.032	.763

The overall regression equation was significantly associated with IT strategic alignment ($F(6,202) = 26,105; p < .001$). The regression equation explained more than 40 percent of the variance in ratings of strategic alignment ($R\text{-squared} = .437$). However, of the six composite variables shown in Table 24, only two made significant unique contributions. Higher levels of IT strategic alignment were associated with higher Effectiveness in IT Communication as well as higher Competency and Value of IT, after controlling statistically for the effects of other composite measures of organizational characteristics.

CHAPTER 5. DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter discusses the study's results and analysis, recommendations for future studies, and conclusions. Additionally the chapter presents the study's implications for managers and practitioners as well as the study's limitations. The purpose and objective of this quantitative correlational study was to explore the extent to which Information Technology (IT) strategic alignment are impacted by IT governance structural elements (Luftman & Kempaiah, 2007; Peterson, 2004 & Luftman, 2003). The study focused on IT strategic alignment relationship with IT governance. The second purpose was to determine the degree of impacts that may exist between the variables.

A non-experimental correlational quantitative methodology was used to explore the extent to which causal relationships exist. The study's methodology supported the results as demonstrated in the adequate negative or positive outcomes of variables or concepts measured. Consequently, to enable relationship measurements between IT strategic alignment and IT governance, the organizations alignment practices, decision making, processes, competence, IT and business partnerships and skills that drives business goals and objectives for competitive advantage became the factors affecting the relationship in a positive or negative way. Statistical analysis as presented in the study suggested that the correlational design method proved quantifiable for variable measurements.

Summary and Discussion of Results

A discussion of the results begins with a summary of the descriptive data collected. The results suggest that majority of the descriptive items are ordinal measures, so the central tendency of these items could only be described in terms of medians. The median employee in this sample occupied a position that was 3-4 levels below the CEO. The median career level in the sample was Manager. The median year(s) of experience was 16-25 years. This suggests that the sample included senior and experienced managers. Personal characteristics from the study sample demonstrated adequate population group. This was depicted in the median age of participants being 45-55 years old. Additionally, the median education level was a Bachelors' Degree. Participants were employed in a variety of departments. The modal department was Information Technology where nearly one in four participants was employed in this department. The vast majority of participants were employed in one of three economic sectors: Finance/Banking (33%), Manufacturing (29%), or Government/Industry (26%). The median organizational size was 1,000 to 5,000 employees, including an IT Department fewer than 100 staff. Therefore, the descriptive data presented adequate sample for the study's analysis.

Study Reliability

Data collected through the instrument for the study was measured for internal consistency and reliability. The cumulative pattern of the factor analyses findings suggests that the content covered by each section of the survey can be assessed by a single unitary dimension. After construction of alpha, the findings suggest that the composite measures constructed from each section of the survey instrument possess adequate internal

consistency to be utilized as predictors of IT strategic alignment and IT governance. This was evident as the average alpha score was 0.829 as depicted in chapter 4 Table 22.

Summary of Hypothesis Results

H1₀: (Null) There is no correlation between IT strategic alignment and IT governance.

H1_a: There is a positive correlation between IT strategic alignment and IT governance.

H2₀: (Null) There is no correlation between IT strategic alignment and Centralized IT governance structure.

H2_a: There is a positive correlation between IT strategic alignment and Centralized IT governance structure.

H3₀: (Null) There is no correlation between IT strategic alignment and Decentralized IT governance structure.

H3_a: There is a positive correlation between IT strategic alignment and Decentralized IT governance structure.

H4₀: (Null) There is no correlation between IT strategic alignment and Federal IT governance structure.

H4_a: There is a positive correlation between IT strategic alignment and Federal IT governance structure.

Organizations choice of IT governance structure as it aligns with IT strategic alignment is the focus of this study. The first research question and hypothesis sort to explore the relationship between IT strategic alignment and IT governance structures. While the test reveals that there is a positive correlation between IT strategic alignment and IT governance structures (rejecting the null hypothesis that there is no correlation), hypothesis

two through four suggested that hypothesis one was not specific enough to address governance structures as individual entities. In other words, hypothesis one focused on the relationship between IT strategic alignment and IT Governance structures. However, analysis and results of research question one presented a general relationship that was not specific to a single governance structure. Therefore, analyses that addressed IT governance structure with research questions two, three, and four more clearly delineate where and how organizations with Centralized, Decentralized, and Federated IT Governance differ with respect to IT strategic alignment.

In hypothesis two, the Mann-Whitney U test and correlational statistics (see Appendix G1 – G4) was employed to test the null hypothesis that IT strategic alignment is not associated with Centralized governance structure. The alternative hypothesis on the other hand proposed that IT strategic alignment was positively correlated with IT Centralization. The value of the U-test was 4,774, which did not attain statistically significance at the .05 level. These findings did not support the rejection of the null hypothesis. Instead the null hypothesis of no correlation between centralization and IT strategic alignment is retained. This suggests that a centralized IT governance structure where a designated corporate IT unit has complete and primary decision making authority for IT architecture, standards, and application resource for the entire organization (Luthman, 2003), has no effect in the way an organization plans and implements its IT strategic alignment processes. In other words, if all IT decisions are made only at the corporate level, strategic alignment elements such as effective communication, competence and value, partnership between business and IT, skills, technology integration and transparency becomes insignificant (Reich & Benbasat, 2002).

Hypothesis three tested the null hypothesis that IT strategic alignment is not associated with Decentralization against the alternative hypothesis that IT strategic alignment has a positive correlation with Decentralized IT governance. The value of the U-test was 2,855, which barely failed to attain statistical significance at the .05 level. The p-value for this analysis was .055. These findings do not support the rejection of the null hypothesis. Instead the null hypothesis of no association between decentralization and IT strategic alignment is retained. This finding suggests that while there is a general relationship between IT strategic alignment and IT governance structures, decentralizing all IT functions without any corporate oversight is a recipe for inefficiency of IT operations in meeting corporate goals and objectives (Reich & Benbasat, 2002).

While centralized and decentralized failed to correlate with IT strategic alignment, hypothesis four which sort to test the correlation between IT strategic alignment and Federal IT governance structure produced a U-test value of 2,169.5, which attained statistical significance at the .01 level. These findings support the rejection of the null hypothesis in favor of the alternative hypothesis that IT strategic alignment differs between Federated and non-Federated organizations. Inspection of the distribution of IT strategic alignment ratings indicates that levels of IT strategic alignment are higher when IT Governance is Federated. Illustratively, 51% of the respondents who indicated that IT management was Federated also indicated that IT strategic alignment was 'Improved' or 'Optimal', compared with only 32% of the respondents who indicated that IT Governance was not Federated. Hypothesis four proves that an organization that maintains IT decision making authority and responsibility over corporate IT architecture, common systems, and standards decisions while each functional unit has decision making authority and responsibility for application resource and

flexibility of a tailored implementation for that specific unit has high probability of achieving optimal IT strategic alignment leading to a high competitive advantage (Van Grembergen, De Haes & Guldentops, 2003; Luftman, 2003). As evident from the literature in chapter 2, achieving a high strategic alignment can drive organizations competitiveness as goals and objectives are achieved more efficiently. Detailed crosstabulation for correlation of hypothesis one through four is presented in Tables G1 through G4 in appendix G.

Examination of other Organizational Characteristics

In order to examine the association between organizational characteristics and IT strategic alignment, correlational and multiple regression analyses were conducted. The correlation coefficients produced a positive correlation greater than 0.5 in magnitude. As the composite increases, scores on strategic alignment increased as well. Characteristics examined to affect IT strategic alignment and IT governance were effectiveness of IT communication with business and vice versa, competency and value of IT in achieving organizational goals, partnerships between IT and business, IT architecture and overall organizational skills. As mentioned above, correlations between each of the composite measures as it relates to IT strategic alignment and IT governance were statistically significant. These findings suggest that a wide range of organizational characteristics are associated with higher levels of IT strategic alignment. For example, 62% of survey respondents (Figure I1, Appendix I) reported that their organizations were ready for change. Additionally, 61% (Figure I2, Appendix I) stated a business and IT change was transparent across the entire organization. Consequently, participants who reported that their organizations were not ready for change registered low levels of IT strategic alignment and

employed either centralized or decentralized governance structures. This suggests that an organization must be able to measure IT contribution to the business as part of the overall strategic alignment process (McKeen & Smith, 2003). The overall regression equation for organizational characteristics was significantly associated with strategic alignment as described in chapter four. In other words, an organization has a better chance of achieving a high optimal IT strategic alignment level when it adapts a Federal governance structure coupled with effective communication and partnership within business and IT departments.

Implication for Researchers and Practitioners

As part of a strategy planning process in an organization, managers and practitioners may benefit from improved processes, competitive advantage and achieving of their goals and objectives if the right IT governance structure is adapted to complement IT strategic alignment plans for effective IT organizations. For example, 66.3 percent of respondent as identified in table 11 above new who made IT decisions in their organizations. The highest percentage IT decisions made in respondents organizations are made by top business management at corporate and functional unit levels, with emerging shared influence from IT management accounting for 16 percent. 33.7 percent of respondent did not know who made IT decisions in their organizations. This suggests that managers in organizations must address how decisions materialize as well as decentralize some decision down below the functional unit levels. In other words, functional units levels should be part of the decision making process if IT governance and strategic alignment are going to be successful. Additionally, IT decision making should be a shared practice between business and IT managers (Sambamurthy & Zmud, 1999). Researchers on the other hand benefits from the

added knowledge and expansion of the domain literature. Additionally, researchers can attend to limitations of this research by adapting a different epistemological perspective and philosophical orientation to address the same phenomenon discussed in this study.

Study Limitations

A limitation to this study is that not all organizational dynamics that affects or influence IT governance and IT strategic alignment was included in the study or assessed as part of the research problem and hypothesis testing. Organizational behavior, leadership styles, employee satisfaction as influenced by compensation structure among several organizational dynamics could not be explored to ascertain its impact on the success of organizations IT governance and or IT strategic alignment.

Recommendations for Further Research

Additional study or exploration into how governance decisions are made by boards and committees will enrich the understanding of the relationship between IT strategic alignment and IT governance. While this is a quantitative study, a qualitative study of organizational characteristics such as effectiveness of IT communication with business and vice versa, competency and value of IT in achieving organizational goals, partnerships between IT and business, IT architecture and overall organizational skills, employee satisfaction and how such characteristics may impact a successful IT strategic alignment for competitive advantage would add greatly to the body of knowledge.

Conclusions

This research contributed to the body of literature knowledge of IT strategic alignment and IT governance structures by exploring the degree of relationship between the

two dependent and independent variables. While there is a relationship between IT strategic alignment and IT governance, only Federalized governance structure proved to be positively correlated when differentiated hypothesis between the structures of IT governance were produced. Centralized and Decentralized retain their null hypothesis of no correlation. Furthermore, organizations that adapted federalized governance structures registered optimal levels of IT strategic alignment. The organizations with high IT strategic alignment also exemplified effectiveness in decision making and communication between IT and business as well as higher competency and value of IT contribution to the organization.

Organizational characteristics that influence strategic alignment and IT governance practices are countless and divers in such a way that all organizational characteristics could not be represented in this research. This is a limitation as addressed above. The association of organizational characteristics with IT strategic alignment and IT governance is presented in Figure 9 (chapter 2). Practitioners and researchers may benefit from this research as a specific correlation of optimal IT strategic alignment and federalized governance structure is analyzed for achieving organizational goals and objectives.

REFERENCES

- Andriole, S. J. (2006). The collaborate/integrate business technology strategy. *Communication of the ACM*, 49, 5, 85-90.
- Avison, D., Gregor, S., & Wilson, D. (2006). Managerial IT unconsciousness. *Communications of the ACM*, Retrieved April 6, 2008, from ABI/INFORM Global database.
- Avison et al., (2004). Using and validating the strategic alignment model. *Journal of Strategic Information Systems*, 13, 223-246.
- Bergeron, F., Raymond, L., & Rivrad, S. (2003). Ideas of strategic alignment and business performance. *Information and Management*, 41(8), 1003-1020.
- Boynton, A., & Zmud, R. (1987). Information Technology Planning in the 1990's: Directions for Practice and Research. *MIS Quarterly*, 11(1), 59-71.
- Brancheau, J., & Wetherbe, J. (1987). Key Issues in Information Systems Management. *MIS Quarterly*, 11(1), 23-45.
- Burn, J., & Szeto, C. (2000). A comparison of the views of business and IT management on success factors for strategic alignment. *Information and Management, Elsevier*, 37(4), 197-216.
- Brown, C. V., & Magill, S. L. (1998). Reconceptualizing the context-design issue for the information systems function. *Organization Science*, 9(2), 176-194.
- Burton-Jones, A., & Hubona, G. S. (2005). Individual differences and usage behavior: revisiting a technology acceptance model assumption. *SIGMIS Database* 36(2), 58-77.
- Carnegie Mellon Software Engineering Institute Capability Maturity Model (CMM), (n.d.). From www.sei.cmu.edu/cmml/.
- Cattell, R.B. (1966). The scree test for the number of factors. *Multivariate Behavior Research*, 1, 245-76.
- Chan, Y.E., & Huff, S.L. (1993). Investigating information systems strategic alignment. *Proceedings of the 9th International Conference on Information Systems*, Orlando, FL. pp. 345-363.
- Croteau, A. M., & Bergeron, F. (2001). Information Technology Trilogy: Business strategy, technology deployment and organizational performance. *Journal of Strategic Information Systems*, 10, 77-99.

- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed method approaches* (2nd ed.). Thousand Oaks: CA, Sage.
- Dorociak, J. (2007). *The alignment between business and information system strategies in small banks: An analysis of performance impact*. Ph.D. dissertation, Capella University, United States.
- Feurer, R., Chaharbaghi, K., Weber, M., & Wargin, J. (2000). Alignment Strategic, Process and IT: A case study. *Information Systems Management*, 23-34.
- Fowler, F. J. (2009). *Survey research methods* (4th ed.). Thousand Oaks, CA: Sage.
- Glassberg, B. C., Grover, V., & Teng, J. T. (2006). Information systems research with an attitude. *SIGMIS Database* 37, 2-3, 76-85.
- Gregor, S. (2006). The nature of theory in Information Systems. *MIS Quarterly*, 30(3), 611-642.
- Hartono, E., Lederer, A. L., Sethi, V., & Zhuang, Y. (2003). Key predictors of the implementation of strategic information systems plans. *SIGMIS Database* 34(3), 41-53.
- Henderson, J., & Sifonis, J. (1988). The Value of Strategic IS Planning: Understanding Consistency, Validity, and IS Markets. *MIS Quarterly*, 12(2), 187-200.
- Henderson, J. C., & Venkatraman, N. (1993). Strategic alignment: Leveraging information technology for transforming organizations. *IBM System Journals*, 32(1), 4-16.
- Hirschheim, R., & Sabherwal, R. (2001). Detours in the Path toward Strategic Information Systems Alignment. *California Management Review*, 44(1), 87-108.
- IT Governance Institute. (2003). *Board Briefing on IT Governance (2nd ed)*. Retrieved April 7, 2008, from www.isaca.org
- Keen, P. G. (1993). Information Technology and the Management Difference: A fusion Map. *IBM Systems Journal*, 32(1), 17-39.
- Key Issues in Information Systems Management (1996). 1994-1995 SIM Delphi Results. *MIS Quarterly*. Retrieved July 28, 2008, from Business Source Complete Database.
- Khadem, K. N. (2007) *Aligning enterprise and information technology strategy: A study of the correlation between strategic alignment and adaptation of enterprise-wide strategy formulation processes*. Ph.D. dissertation, Capella University, United States.

- Korac-Kakabadse, N., & Kakabadse, A. (2001). IS/IT governance: Need for an integrated model. *Corporate Governance*, 1(4), 9.
- Lederer, A.L., & Sethi, V. (1992). Root causes of strategic information systems planning problems. *Journal of Management Information Systems*, 9, 1, 25-45.
- Luftman, J. N. (2002). Assessing IT-Business alignment Maturity. *Communications of AIS*, 4(14).
- Luftman, J. N. (2003). Assessing IT-Business alignment. *Information Systems Management*, 20(4), 9-15.
- Luftman, J. N., & Brier, T. (1999). Achieving and sustaining business-IT alignment. *California Management Review*, 42(1), 109-122.
- Luftman, J. N., Lewis, P. R., & Oldach, S. H. (1993). Transforming the enterprise: The alignment of business and information technology strategies. *IBM System Journals*, 32(1), 198-221.
- Luftman, J. N., & Kempaiah, R. (2007). An update on Business-IT alignment: A line has been drawn. *MIS Quarterly Executive*, 6(3), 165-177.
- Maxwell, A. J. (2005). Qualitative research design: An interactive approach. *Social Science*, 34-174.
- Maes, R. (1999). Reconsidering Information Management through a Generic Framework. *Prima Vera Working Paper*, (9)15.
- McFarlan, F. (1981). Portfolio approach to information systems. *Harvard Business Review*, 59(5), 142-150.
- McKeen, J. D. & Smith, H. A. (2003). *Making IT happen: Critical Issues in IT Management*. Chichester, UK: John Wiley & Sons.
- Miles, R. E. & Snow, C. C. (1978) *Organization Strategy and Process*. NY, New York: McGraw-Hill
- Nambisan, S. (2003). Information Systems as a reference discipline for new product development. *MIS Quarterly*, 27(1), 1-18.
- Nash, E. M. (2006). *Assessing IT as a driver or enabler of transformation in the pharmaceutical industry employing the strategic alignment maturity model*. Unpublished doctoral dissertation, Stevens Institute of Technology, New Jersey.

- Nath, R. (1989). Aligning MIS with business goals. *Information and Management*, 16, 71-79.
- Peterson, R. (2004). Crafting information technology governance. *Information Systems Management*, 21(4), 7-22.
- Porter, M. (1980) *Competitive Advantage*. NY, New York: Free Press.
- Porter, M. (1996). What Is Strategy? *Harvard Business Review*, 74(6), 61-78. Retrieved July 4, 2008, from Business Source Complete database.
- Porter, M. (1997). What is strategy? *Harvard Business Review*, 75(1), 156-157. Retrieved July 4, 2008, from Business Source Complete database.
- Reich, B., & Benbasat, I. (2000). Factors that Influence the Social Dimension of Alignment between Business and Information Technology Objectives. *MIS Quarterly*, 81-113.
- Reich, B., & Benbasat, I. (1996). Measuring the Linkage between Business and Information Technology Objectives. *MIS Quarterly*, 20(1), 55-81.
- Rockart, J. E., Earl, M., & Ross, J. W. (1996). Eight imperatives for the new IT organization. *Sloan Management Review*, 38(1), 43-55.
- Roepke, R., Agarwal, R., & Ferratt, T. (2000). Aligning the IT Human Resource with business vision: The leadership initiative at 3M. *MIS Quarterly*, 24(2), 327-353.
- Sabberwal, R., & Chan, Y. (2001). Alignment between Business and IS Strategies: A Study of Prospectors, Analyzers, and Defenders. *Information Systems Research*, 12(1), 11.
- Sambamurthy, V., & Zmud, R. W. (1999). Arrangement for Information technology Governance: A theory of multiple contingencies. *MIS Quarterly* (23)2. 261-290
- Sauer, C. & Yetton, P. W. (1997). *Steps to the future: Fresh thinking on the management of IT-based organizational transformation*. San Francisco, CA: Jossey Bass.
- Segars, A., & Grover, V. (1999). Profiles of Strategic Information Systems Planning. *Information Systems Research*, 10(3), 199.
- Sledgianowski, D., Luftman, J. N., & Reilly, R. R. (2006). Development and validation of an instrument to measure maturity of IT business strategic alignment mechanisms. *Information Resources Management*, 19(3), 18-33.
- Smaczny, T. (2001). Is an alignment between business and information technology the appropriate paradigm to manage IT in today's organizations? *Management Decision*, 39(10), 797-802.

- Sogunro, O. (2002). Selecting a Quantitative or Qualitative Research Methodology: An Experience. *Educational Research Quarterly*, 26(1), 3.
- Steiner, G. A. (1979). *Strategic Planning*. New York, NY: Free Press.
- Swanson, R. A., & Holton, E. F. (2005). *Research in Organizations: foundations and methods of inquiry*. San Francisco: Berrett-Koehler Publishing, Inc.
- Templeton, G. F., Lewis, B. R., & Snyder, C. A. (2002). Development of a Measure for the Organizational Learning Construct. *Journal of Management Information Systems*, 19(2), 177-220.
- Teo, T., & King, W. (1997). Integration between Business Planning and Information Systems Planning: An Evolutionary-Contingency Perspective. *Journal of Management Information Systems*, 14(1), 185-214.
- Trochim, W. M. K. (2006). *Research Methods knowledge base*. Wed center for Social Research Methods. Retrieved July 16, 2008, from <http://www.socialresearchmethods.net/kb/positvsm.php>.
- Van Grembergen, W., De Haes, S., & Guldentops, E. (2004). Structures, Processes and Relational Mechanisms for IT Governance. *Idea Group Publishing*.
- Venkatraman, N., (1999). Valuing the IS contribution to the business, Computer Science Corporation.
- Venkatraman, N. (1985). Research on MIS Planning: Some Guidelines from Strategic Planning Research. *Journal of Management Information Systems*, 2(3), 65-77.
- Wade, M., & Hulland, J. (2004). The Resource-Based View and Information Systems research: Review, extension, and suggestions for future research. *MIS Quarterly*, 28(1), 107-142.
- Walker, W (2005). The Strengths and Weaknesses of Research Designs involving Quantitative Measures. *Journal of research in nursing*, 10, (5). 571-582.
- Ward, J. & Peppard, J. (2002). *Strategic Planning for Information Systems*. Chichester: John Wiley & Sons.
- Weill, P., & Broadbent, M. (1998). *Leveraging the new infrastructure: how markets leaders capitalize on Information Technology*. Boston, Harvard Business School Press.
- Weill, P., & Broadbent, M. (1993). Improving business and information strategy alignment: Learning from the banking industry. *IBM Systems Journal*, 32(1), 162-179.

- Weill, P. & Ross, J. (2005). A Matrixed Approach to Designing IT Governance. *MIT Sloan Management Review*, 46(2), 26.
- Wilbanks, L. (2008). IT management and governance in equal parts. *IT Professional Magazine*, 10(1), 60-61.
- Yayla, A. (2008). *Antecedents of IT-Business strategic alignment and the moderating roles of goal commitment and environment uncertainty*. PhD Dissertation, Florida Atlantic University, Boca Raton, FL.

APPENDIX A. WELCOME LETTER

Introduction

Dear participant,

You are invited to take part in a survey that would add knowledge to the extent to which Information Technology (IT) strategic alignment success and processes are enabled or impacted by IT governance structures. The study will explore relationships between IT strategic alignment and IT governance structures (Centralized, decentralized or federal).

IT strategic alignment is documented in literature as a critical process in organizations that allow organizations to achieve business goals. IT that is effectively aligned has the potential to drive efficiency and competitive advantage. However, organizations continue to fail in this critical alignment process. The study will explore IT strategic alignment relationship with IT governance as a mechanism for successful alignment. The finding of the study will be published.

As clearly stated in the attached informed consent form, please be aware that your name, organization and any identifying information will not appear on any data or report generated from your answers. Codes and random identifiers will be assigned to all answers for purposes of processing, statistical analysis and reporting. You are assured confidentiality and anonymity as indicated in the informed consent attached herein. All research materials will be managed solely by the researcher in a safe and secure manner and location. Electronic materials will be password protected. You can withdraw at any time realizing that your participation in this research is strictly voluntary. You may also ask that your data be destroyed at anytime without repercussions. Thank you in advance for your participation.

Keith Asante
Capella University
School of Business and Technology

APPENDIX B. INFORMED CONSENT FORM

RE: AGREEMENT TO PARTICIPATE IN RESEARCH

1. Researcher:

Keith K Asante, (PhD. Student)
Capella University, School of Business and Technology
Minneapolis, MN 55402

2. Purpose of this research:

The purpose of this study is to explore the extent to which IT strategic alignment are impacted by IT governance structural elements based on an alignment maturity model and an IT governance framework. This study focuses on IT strategic alignment relationship with IT governance. The second purpose is to determine the degree of impacts that may exist between the variables.

3. Project Title:

Information Technology (IT) strategic alignment: A correlational study between the impact of IT Governance structural elements and IT strategic alignment

4. Selection Process and Expectations:

Data source for the study will come from business and technology management professionals who have knowledge of their organization's IT strategic alignment and IT governance and are part of creating and or maintaining these processes. Participants are required to be IT and or business decision makers in some capacity within their organizations. The business and technology professionals demographic will form the basis for the study's population sample. The average participant professional role is line managers, senior management to executives. Participants to be invited will account for over 4000 professionals.

Furthermore, as directed in Department of Education (DOE) Order 241.1A Chg 1 (Scientific and Technical Information Management), the researcher will ensure that all scientific and technical information (STI) that is obtained in this research is identified, processed, and preserved in a manner that (a); enables the scientific community and the public to locate and use the STI resulting from this research and related endeavors and (b); ensures that access to STI is protected throughout the research process.

5. Potential Risks of Participation:

Upon approval and publishing of the dissertation, the scientific and technical information (STI) obtained will be presented to the general public. Therefore, while personal information will be purged from the findings prior to publication, sensitive information pertaining to organizational strategies and processes may be disseminated.

6. Participants' Right:

a. To anonymity:

Your name or identifying information will not appear on any data or report generated from your response to the questionnaire. Codes and random identifiers will be assigned to data from the survey for purposes of processing, analysis and reporting.

b. To Confidentiality:

All research materials will be managed solely by researcher in a safe and secure manner and location. Electronic materials will be password protected.

c. To Withdrawal at any Time:

Your participation in this research is strictly voluntary. You may discontinue participation at any time without any adverse ramifications. You may also ask that your data be destroyed at anytime without repercussions

d. Capella Human rights Protection Office of Research:

If you have any questions about your rights as a research participant or any concerns about the research process, or if you'd like to discuss an unanticipated problem related to the research, please contact the Capella Human Research Protections Office at: 1-888-227-3552, extension 4716. Your identity, questions, and concerns will be kept confidential.

7. Benefits of Participation:

There is no direct benefit for participating in this research. However, there is a great potential to increasing the knowledge domain of information technology strategic alignment and IT governance through your participation. Therefore, an indirect benefit is the added knowledge and understanding of phenomenon that may help organizations improve their strategic alignment success.

8. Contact Information:

You are encouraged to seek clarification at anytime about any issues of concern regarding your participation in this research. Please utilize the following contact information:

a. Researcher: Keith Asante.

b. Faculty advisor: Dr. Laura Hutt, School of Business and Technology, Capella University, [REDACTED], [REDACTED].

c. Mentor: Dr. Steven Brown, Capella University, Minneapolis, MN 55402, ([REDACTED] [REDACTED]).

9. Agreement:

My signature herein indicates that I have read and understood the above conditions of participation, that I have received satisfactory answers to my questions regarding this research, and that I have been apprised of my right to withdraw my consent and participation in this research at anytime without undue repercussions.

I understand that consenting to participate indicates my agreement to release relevant information that may be requested during the survey process.

If I cannot obtain satisfactory answers to my questions, or have comments or complaint about my participation in the study, I may contact Capella University using the contact information listed in section 6 and 8 above.

Name: _____ Date: _____

Signature: _____

APPENDIX C. PERMISSION FOR USE OF RESEARCH INSTRUMENT

Granted Permission for the use of research instrument

Jerry Luftman <[REDACTED]>	Thu, Aug 27, 2009 at 10:04 AM
To: Keith Asante <[REDACTED]>	
<p>Hi.</p> <p>If you share your data with me (naturally company names will remain anonymous) you can use my assessment model.</p> <p>Jerry Luftman</p> <p>Executive Director & Distinguished Professor</p> <p>STEVENS</p> <p><u>Institute of Technology</u></p>	

APPENDIX D. FIELD TEST INSTRUMENT VALIDATION FORM

Performance Impact of the Alignment between Business and Information System Strategies – Instrument Validation

This quantitative investigation will study the relationship between organizational IT strategic alignment and IT governance structures, impacts and influence on alignment practices as defined by information technology strategic alignment maturity (SAM) as established by Luftman (2003). As demonstrated by the literature, the SAM measures strategic maturity according to maximized networked organizational characteristics. Thus, this investigation's purpose will be to evaluate IT strategic alignment practices as related and affected by IT governance structures.

The problem is that despite over four decades of research in IT strategic alignment, there is lack of research that explores and investigates the relationship and structural impacts of IT Governance to IT strategic alignment (Korac-Kakabadse & Kakabadse, 2001; Peterson, 2004; Avison, Gregor & Wilson, 2006 and Wilbanks, 2008). Weill and Ross (2005) add that the effectiveness of an organization's IT to the business depends on IT alignment relationship to managements IT governance decisions.

While the importance of IT strategic alignment is discussed in the extant literature, researchers continue to report on the failures of achieving IT strategic alignment in organizations (Luftman & Kempaiah, 2007). Furthermore, the lack of IT strategic alignment in organizations lead to pure IT Return on Investment (ROI), inefficient operations due to pure performance (Luftman & Kempaiah, 2007; Sabberwal & Chan, 2001) that impact the organizations competitive advantage (Luftman, Lewis & Oldach, 1993; Keen, 1993; Smaczny, 2001). Luftman & Brier (1999) adds that a successful IT alignment has the capability to transform an organization and an industry and is a "fundamental principle that has been advocated for over a decade" (p. 110). Congruent to this assertion, Paterson (2004) identifies IT governance as the framework to guide organizations IT strategic alignment process.

The purpose of this quantitative correlational study is to explore the extent to which IT strategic alignment are impacted by IT governance structural elements based on an alignment maturity model (SAM) and an IT governance framework (Luftman & Kempaiah, 2007; Peterson, 2004 and Luftman, 2003). This study focuses on IT strategic alignment relationship with IT governance. The second purpose was to determine the degree of impacts that may exist between the variables. The research explores selected U.S. industries made up of over 4000 business and IT executives and middle managers who are in the line

of decision making regarding the organizations IT and governance structures to add knowledge to business leaders and researchers.

Your expertise as a PhD in business and technology is requested for evaluating whether the IT strategy alignment and IT governance survey questionnaire's obtain necessary measurements and whether those measurements support the research goals. **The questionnaire should measure IT strategic alignment and IT Governance and behavioral characteristics generally attributed to failing IT strategic alignment (similar to those supported by the Capability Maturity Model (CMM)).** After you read each section in the attached questionnaire please answer the following questions and reply via return e-mail. *Please do not complete the questionnaire.*

1. Which of the following choices best describes your expertise?

- Business
 Information Technology
 Both

Please consider your ability to use responses to each section's questions to obtain an understanding of the questions posed below. For example, although each of the questions in Part VI may not appear uniquely applicable to partnership, would a person with your expertise reasonably apply that section's questions to understanding the partnership between an organization's business and information Technology? Please apply this concept to the questions for survey Part II through III.

2. Do the questions in Part II apply to IT governance?

(yes) (no) comment:

3. Do the questions in Part II appear descriptive of IT governance processes and structural characteristics in organizations?

(yes) (no) comments:

4. Do the questions in Part II appear definitive of IT governance structure to information technology organizational structural interactions?

(yes) (no) comments:

5. Do the questions in Part III Section 1 relate to business and information technology intercommunication?

(yes) (no) comments:

6. Do the questions in Part III section 2 address metrics of the integrated effects between business and information technology?

(yes) (no) comments:

7. Do the questions in Part III section 3 relate to partnership based mutual contributions of shared risk and rewards between business and information systems?

(yes) (no) comments:

8. Do the questions in Part III section 4 pertain to information technology scope or architecture?

(yes) (no) comments:

9. Do the questions in Part III section 5 appear indicative of the effects of organizational culture as it pertains to information technology?

(yes) (no) comments:

10. Do you feel that the survey addresses sufficient characteristics to determine alignment to IT governance impacts as affected by organizational business goals and objectives?

(yes) (no) comments:

APPENDIX E. RESEARCH INSTRUMENT

Instructions

No information that you submit will be identified with you or your company. Where two answers are possible in a question, select the one answer that most influence business and technology strategic alignment effectiveness in your organization. **PLEASE SELECT ONLY ONE ANSWER PER QUESTION.** Some questions are multiple choice formats with answers that have boxes that can be checked and unchecked by double clicking on the box while answers to some questions are on different scales measurement such as disagree to agree. Furthermore, your answers should indicate your opinion of the behavior or effectiveness of your organizations management practices concerning strategic alignment decision as they relate to IT governance. If the answer to a question is not known or unclear or the question is simply not applicable to your organization, please select the 'don't know box' N/A or Neutral.

Kindly proceed to survey questions below. You are allowed to take the survey once from each computer. Again, thank you very much and your participation is greatly appreciated.

Survey Questions

PART I: PARTICIPANTS DEMOGRAPHIC INFORMATION

1. Hierarchical distance from CEO

Ceo, 1-2 levels 3-4 levels > 4 levels

2. Please indicate Department

Business Unit (BU) IT, Finance, HR, Corporate, Other–Please state

3. Your age group

< 25, 25 – 35, 35 – 45, 45 – 55, > 55

4. Education level (Highest level completed)

GED/High School
 Some College

- Bachelors Degree
- MBA/Masters
- Post Masters
- Ph.D / Doctorate
- Post Doctorate
- Other (Please specify) _____

5. Career Level

- Entry Level
- Staff
- Supervisor
- Manager
- Mid Level Manager
- Senior Manager
- Executive
- Other (Please specify) _____

6. Please indicate industry

- Government/Military
- Finance/Banking/Insurance
- Manufacturing
- Healthcare/Medical
- Biotech
- Telecommunications
- Other, (Please specify) _____

7. Years of industry relevant experience

- Less than 3 years
- 3 – 5 years
- 6 – 10 years
- 11 – 15 years
- 16 – 25 years
- More than 25 years

8. Please indicate number of employees (Size of organization)

- < 1,000, 1,000 – 5,000, 5,000 – 10,000, 10,000 – 50,000, > 50,000

9. Number of employees in IT department

- < 100, 100 – 250, 250 – 500, 500 – 1,000, > 1,000

PART II: IT GOVERNANCE STRUCTURE

10. The following statements pertain to strategic business planning with IT participation.

- We do no formal strategic business planning or, if it is done, it is done on an as-needed basis.
- We do formal strategic business planning at the functional unit level with slight IT participation.
- We do formal strategic business planning at the functional unit levels with some IT participation. There is some inter-organizational planning.
- We do formal strategic business planning at the functional unit and across the enterprise with IT participation.
- We do formal strategic business planning at the functional unit, across the enterprise, and with our business partners/alliances with IT participation.
- N/A or don't know

11. The following statements pertain to strategic IT planning with business participation.

- We do no formal strategic IT planning
- We do formal strategic IT planning at the functional unit level with minimal business participation.
- We do formal strategic IT planning at the functional unit levels with some business participation.
- We do formal strategic IT planning at the functional unit and across the enterprise with the business.
- We do formal strategic business planning at the functional unit, across the enterprise, and with our business partners/alliances.
- N/A or don't know

12. The following statements pertain to the organization (governance) structure of the IT function. Our IT function is:

- Centralized, whereby a corporate IT unit (or other central unit) has primary authority for architecture, standards, and application resource decisions
- Decentralized, whereby each functional unit within the organization has primary authority for their IT infrastructure, standards, and application resource decisions
- Federated, whereby a corporate IT unit (or other central unit) has primary responsibility for architecture, common systems, and standards decisions, while each functional unit has primary authority for application resource decisions
- N/A or don't know

13. The CIO reports to the _____

14. The following statements pertain to IT budgeting. Our IT function is budgeted as a:

- Cost center, with erratic/inconsistent/irregular/changeable spending
- Cost center, by functional organization
- Cost center with some projects treated as investments
- Investment center
- Profit center, where IT generates revenues
- N/A or don't know

15. The following statements pertain to IT investment decisions. Our IT investment decisions are primarily based on IT's ability to:

- Reduce costs.
- Increase productivity and efficiency as the focus.
- Traditional financial reviews- IT is seen as a process enabler.
- Business effectiveness is the focus. IT is seen as a process driver or business strategy enabler.
- Create competitive advantage and increase profit. Our business partners see value.
- N/A or don't know

16. The following statements pertain to IT steering committee(s) with senior level IT and business management participation.

- We do not have formal/regular steering committee(s).
- We have committee(s) which meets informally on an as-needed basis.
- We have formal committees, which meet regularly and have emerging effectiveness.
- We have formal, regular committee meetings with demonstrated effectiveness.
- We have formal, regular committee meetings with demonstrated effectiveness that include strategic business partners sharing decision-making responsibilities.
- N/A or don't know

17. The following statements pertain to how IT projects are prioritized. Our IT project prioritization process is usually:

- In reaction to a business or IT need
- Determined by the IT function
- Determined by the business function
- Mutually determined between senior and mid-level IT and business management
- Mutually determined between senior and mid-level IT and business management and with consideration of the priorities of any business partners/alliances
- N/A or don't know

18. The ability of the IT function to react/respond quickly to the organization's changing business needs is:

- Very weak
- Somewhat weak
- Neither weak nor strong
- Somewhat strong
- Very strong
- N/A or don't know

PART III: INFORMATION TECHNOLOGY STRATEGIC ALIGNMENT

Section 1: Effectiveness of IT and Business Communications

Alignment Maturity Areas:

- Communication
- Competency
- Governance
- Partnership
- Technology
- Skill

Explanation of Strategic Alignment Maturity:

A level 1 alignment maturity means that a company lacks the process within all six identified maturity areas above needed to attain alignment. In a level 5 company, IT and all other business functions (marketing, finance, R&D, etc.) adapts their strategies together using fully developed processes that includes external partners and customers with all 6 maturity areas.

19. After quickly reviewing the preceding *Strategic Alignment Maturity Summary* which level of strategic alignment maturity do you believe best represents your organization today?

- Level 1 Initial/ad-hoc process
- Level 2 Committed process
- Level 3 Established focused process
- Level 4 Improved/managed process
- Level 5 Optimized process

20. To what extent does IT understand the organization's business environment?

- Senior and mid-level IT managers do not understand the business.
- Senior and mid-level IT managers have a limited understanding of the business.
- Senior and mid-level IT managers have a good understanding of the business.
- Understanding of the business by all IT members is encouraged and promoted by senior managers.

- Understanding of the business is required (e.g., tied to performance appraisals) throughout the IT function.
- N/A or don't know

21. To what extent do the business organizations understand the IT environment?

- Senior and mid-level business managers do not understand IT.
- Senior and mid-level business managers have a limited understanding of IT.
- Senior and mid-level business managers have a good understanding of IT.
- Understanding of IT by all employees is encouraged and promoted by senior management.
- Understanding of IT is required (e.g., tied to performance appraisals) throughout the business.
- N/A or don't know

22. The following statements pertain to methods in place to promote organizational learning. Organizational learning occurs primarily through:

- Ad-hoc/casual methods
- Informal methods (newsletters, bulletin board notices, group e-mail, etc)
- Regular, clear methods from mid-level management
- Formal, unifying, bonding methods from senior *and* mid-level management
- N/A or don't know

23. The following question pertains to communications protocol. The IT and business communication style (e.g., ease of access, familiarity of stakeholders) tends to be:

- One-way, from the business; formal and inflexible
- One-way, from the business; moderately informal and moderately flexible
- Two-way; formal and inflexible
- Two-way; moderately informal and moderately flexible
- Two-way; informal and flexible
- N/A or don't know

24. The following statements pertain to the extent in which there is knowledge sharing between IT and business:

- Knowledge sharing is on an ad-hoc basis.
- Knowledge sharing is somewhat structured and/or structure is beginning to be created.
- There is structured sharing around key functional unit processes.
- There is formal sharing at the functional unit level *and* at the corporate level.
- There is formal sharing at the functional unit level, at the corporate level, *and* with business partners/alliances.
- N/A or don't know

25. The following statements pertain to the role and effectiveness of IT and business liaisons:

- We do not use liaisons, or if we do, we do so on an ad-hoc, as needed basis.
- We regularly use liaisons to transfer IT knowledge to the business and business knowledge to IT. They are the primary contact point for interactions between IT and the business. Liaisons *are not* usually used to facilitate relationship development.
- We regularly use liaisons to transfer IT knowledge to the business and business knowledge to IT. They occasionally facilitate relationship development.
- We regularly use liaisons to facilitate the transfer of IT knowledge to the business and business knowledge to IT. Their primary objective is to facilitate internal relationship development.
- We regularly use liaisons to facilitate the transfer of IT knowledge to the business and external partners and business knowledge to IT. Their primary objective is to facilitate relationship development across the business and its external partners.
- N/A or don't know

Section 2: Measurement of the Competency and Value of IT

26. The following statements pertain to the metrics and processes used to measure IT's contribution to the business.

- The metrics and processes we have in place to measure IT are primarily technical (e.g., system availability, response time).
- We are equally concerned with technical *and* cost efficiency measures. We have limited or no formal feedback processes in place to review and take action based on the results of our measures.
- We formally assess technical and cost efficiency using traditional financial measures, such as return on investment (ROI) and activity-based costing (ABC). We are starting to put formal feedback processes in place to review and take action based on the results of our measures.
- We formally assess technical, cost efficiency, and cost effectiveness using traditional financial measures (e.g., ROI, ABC). We have formal feedback processes in place to review and take action based on the results of our measures.
- We use a multi-dimensional approach with appropriate weights given to technical, financial, operational, and human-related measures. We have formal feedback processes in place to review and take action based on the results of our measures. These measures are extended to our external partners (e.g., vendors, outsourcers, customers).
- N/A or don't know

27. The following statements pertain to the use of business metrics to measure business contribution to the business.

- We do not measure the value of our business investments, or do so on an ad-hoc basis.
- We are concerned with cost efficiency measures at the functional organization level only. We have limited or no formal feedback processes in place to review and take action based on the results of our measures.
- We formally use traditional financial measures, such as return on investment (ROI) and activity-based costing (ABC), across functional organizations. We are starting to have formal feedback processes in place to review and take action based on the results of our measures.
- We formally measure value based on the contribution to our customers. We have formal feedback processes in place to review and take action based on the results of our measures and to assess contributions across functional organizations.
- We use a multi-dimensional approach with appropriate weights given to technical, financial, operational, and human-related measures. We have formal feedback processes in place to review and take action based on the results of our measures. These measures are extended to our external partners (e.g., vendors, outsourcers, customers).
- N/A or don't know

28. The following statements pertain to the use of integrated IT and business metrics to measure IT's contribution to the business.

- We do not measure the value of our IT business investments, or do so on an ad-hoc basis
- The value measurements for IT and business are not linked. We have limited or no formal feedback processes in place to review and take action based on the results of our measures.
- The value measurements for IT and business are starting to be linked and formalized. We are also starting to have formal feedback processes in place to review and take action based on the results of our measures.
- We formally link the value measurements of IT and business. We have formal feedback processes in place to review and take action based on the results of our measures and to assess contributions across functional organizations.
- We use a multi-dimensional approach with appropriate weight given to IT and business measures. We have formal feedback processes in place to review and take action based on the results of our measures. These measures are extended to our external partners (e.g., vendors, outsourcers, customers).
- N/A or don't know

29. The following statements pertain to benchmarking practices.

(*Informal* practices are such things as informal interviews, literature searches, company visits, etc., while *formal* practices are such things as environmental scanning, data gathering and analysis, determining best practices, etc).

- We seldom or never perform either informal or formal benchmarks.
- We occasionally or routinely perform informal benchmarks.
- We occasionally perform formal benchmarks and seldom take action based on the findings.
- We routinely perform formal benchmarks and usually take action based on the findings.
- We routinely perform formal benchmarks and have a regulated process in place to take action and measure the changes.
- N/A or don't know

30. The following statements pertain to the extent of assessment and review of IT investments.

- We do not formally assess and/or review.
- We assess and/or review only after we have a business or IT problem (i.e., failed IT project, market share loss).
- Assessments and/or reviews are becoming routine occurrences.
- We routinely assess and/or review and have a formal process in place to make changes based on the results.
- We routinely assess and/or review and have a formal process in place to make changes based on the results and measure the changes. Our external partners are included in the process.
- N/A or don't know

31. The following statement pertains to the extent to which IT-business continuous improvement practices (e.g., quality circles, quality reviews) and effectiveness measures are in place.

- We do not have any continuous improvement practices in place.
- We have a few continuous improvement practices in place, but no effectiveness measures are in place.
- We have a few continuous improvement practices in place and the use of effectiveness measures is emerging.
- We have many continuous improvement practices in place and we frequently measure their effectiveness.
- We have well established continuous improvement practices and effectiveness measures in place.
- N/A or don't know

32. The demonstrated contribution that the IT function has made to the accomplishment of the organization's strategic goals is:

- Very weak

- Somewhat weak
- Neither weak nor strong
- Somewhat strong
- Very strong
- N/A or don't know

Section 3: Partnerships between IT and Business Functions

33. IT is perceived by the business as:

- A cost of doing business
- Emerging as an asset
- A fundamental enabler of future business activity
- A fundamental driver of future business activity
- A partner with the business that co-adapts/improvises in bringing value to the firm
- N/A or don't know

34. The following statements pertain to the role of IT in strategic business planning.

- IT does not have a role.
- IT is used to enable business processes.
- IT is used to drive business processes.
- IT is used to enable or drive business strategy.
- IT co-adapts with the business to enable/drive strategic objectives.
- N/A or don't know

35. The following statements pertain to the sharing (by IT and business management) of the risks and rewards associated with IT-based initiatives

- IT takes all the risks and does not receive any of the rewards.
- IT takes most of the risks with little reward.
- Sharing of risks and rewards is emerging.
- Risks and rewards are always shared.
- Risks and rewards are always shared and we have formal compensation and reward systems in place that induce managers to take risks.
- N/A or don't know

36. The following statements pertain to formally managing the IT/business relationship.

- We don't manage our relationships.
- We manage our relationships on an ad-hoc basis.
- We have defined programs to manage our relationships, but IT or the business does not always comply with them.

- We have defined programs to manage our relationships and both IT and the business comply with them.
- We have defined programs to manage our relationships, both IT and the business comply with them, and we are continuously improving them.
- N/A or don't know

37. The following statements pertain to IT and business relationship and trust.

- There is a sense of conflict and mistrust between IT and the business.
- The association is primarily an "arm's length" transactional style of relationship.
- IT is emerging as a valued service provider.
- The association is primarily a long-term partnership style of relationship.
- The association is a long-term partnership and valued service provider.
- N/A or don't know

38. The following statements pertain to business sponsors/champions. Our IT-based initiatives:

- Do not usually have a senior level IT or business sponsor/champion.
- Often have a senior level IT sponsor/champion only.
- Often have a senior level IT and business sponsor/champion at the functional unit level.
- Often have a senior level IT and business sponsor/champion at the corporate level.
- Often have a senior level IT and the CEO as the business/sponsor champion.
- N/A or don't know

Section 4: Scope and Architecture of the IT Infrastructure

39. The following statements pertain to the articulation of and compliance with IT standards. Our IT standards are:

- Non-existent *or* not enforced
- Defined and enforced at the functional unit level
- Defined and enforced across functional units
- Defined and enforced across functional units with joint coordination among our strategic business partners/alliances
- N/A or don't know

40. The following statements pertain to the level of disruption caused by business and IT changes. Most of the time, a business or IT change is:

- Not readily transparent (very disruptive)
- Transparent at the functional level only

- Transparent at the functional level and emerging across all remote, branch, and mobile locations
- Transparent across the entire organization
- Transparent across the organization and to our business partners/alliances
- N/A or don't know

41. The following statements pertain to the scope of IT infrastructure flexibility to business and technology changes. Our IT infrastructure is viewed as:

- A utility providing the basic IT services at minimum cost
- Emerging as driven by the requirements of the current business strategy
- Driven by the requirements of the current business strategy
- Emerging as a resource to enable fast response to changes in the marketplace
- A resource to enable and drive fast response to changes in the marketplace
- N/A or don't know

Section 5: Skills

42. The following statements pertain to the extent the organization fosters an innovative entrepreneurial environment. Entrepreneurship is:

- Discouraged
- Moderately encouraged at the functional unit level
- Strongly encouraged at the functional unit level
- Strongly encouraged at the functional unit and corporate levels
- Strongly encouraged at the functional unit, corporate level, and with business partners/alliances
- N/A or don't know

43. The following statements pertain to the cultural locus of power in making IT-based decisions. Our important IT decisions are made by:

- Top business management or IT management at the corporate level only
- Top business or IT management at corporate level with emerging functional unit level influence
- Top business management at corporate and functional unit levels, with emerging shared influence from IT management
- Top management (business and IT) across the organization and emerging influence from our business partners/alliances
- Top management across the organization with equal influence from our business partners/alliances
- N/A or don't know

44. The following statements pertain to your organization's readiness for change.

- We tend to resist change.
- We recognize the need for change and change readiness programs are emerging.
- Change readiness programs providing training and necessary skills to implement change are in place at the functional unit level.
- Change readiness programs are in place at the corporate level.
- Change readiness programs are in place at the corporate level and we are proactive and anticipate change.
- N/A or don't know

45. The following statements pertain to career crossover opportunities among IT and business personnel.

- Job transfers rarely or never occur.
- Job transfers occasionally occur within the functional organization.
- Job transfers regularly occur for management level positions usually at the functional level.
- Job transfers regularly occur for all position levels and within the functional units.
- Job transfers regularly occur for all position levels, within the functional units, and at the corporate level.
- N/A or don't know

46. The following statements pertain to employee opportunities to learn about and support services outside the employee's functional unit (e.g., programmers trained in product/service production functions, customer service trained in systems analysis) using programs such as cross training and job rotation. The organization:

- Does not provide opportunities to learn about support services outside the employee's functional unit.
- Opportunities are dependent on the functional unit.
- Formal programs are practiced by all functional units.
- Formal programs are practiced by all functional units and across the enterprise.
- Opportunities are formally available across the enterprise and with business partners/alliances.
- N/A or don't know

47. The following statements pertain to the interpersonal interaction (e.g., trust, confidence, cultural, social, and political environment) that exists across IT and business units in our organization.

- There is minimum interaction between IT and business units.
- The association is primarily an "arm's length" transactional style of relationship.
- Trust and confidence among IT and business is emerging.
- Trust and confidence among IT and business is achieved.
- Trust and confidence is extended to external customers and partners.

N/A or don't know

48. The following statements pertain to the IT organization's ability to attract and retain the best business and technical professionals.

There is no formal program to retain IT professionals. Recruiting demands are filled ineffectively.

IT hiring is focused on technical expertise.

IT hiring is focused equally on technical and business expertise. Retention programs are in place.

Formal programs are in place to attract and retain the best IT professionals with both technical and business skills.

Effective programs are in place to attract and retain the best IT professionals with both technical and business skills.

N/A or don't know

Thank you for your participation

APPENDIX F. ADDITIONAL DESCRIPTIVE STATISTIC

Table F1:

Frequency and percentages of participants Age Group

		Statistic	Std. Error
Age group	Mean	3.83	0.059
	95% Confidence Interval for Mean		
	Lower Bound	3.72	
	Upper Bound	3.95	
	5% Trimmed Mean	3.88	
	Median	4.00	
	Variance	1.036	
	Std. Deviation	1.018	
	Minimum	1	
	Maximum	5	
	Range	4	
	Interquartile Range	2	
	Skewness	-0.504	0.141
	Kurtosis	-0.686	0.281

Table F2:

Descriptive statistics of participants Education Level (Highest Level Completed)

			Statistic	Std. Error
Education level (Highest level completed)	Mean		3.14	0.066
	95% Confidence Interval for Mean	Lower Bound	3.01	
		Upper Bound	3.27	
		5% Trimmed Mean	3.10	
	Median		3.00	
	Variance		1.294	
	Std. Deviation		1.137	
	Minimum		-1	
	Maximum		7	
	Range		8	
	Interquartile Range		2	
	Skewness		0.649	0.141
	Kurtosis		1.892	0.281

Table F3:

Descriptive statistics of participants Career Level

			Statistic	Std. Error
Career Level	Mean		4.02	0.120
	95% Confidence Interval for Mean	Lower Bound	3.79	
		Upper Bound	4.26	
		5% Trimmed Mean	4.14	
	Median		4.00	
	Variance		4.290	
	Std. Deviation		2.071	
	Minimum		-1	
	Maximum		7	
	Range		8	
	Interquartile Range		3	
	Skewness		-0.672	0.141
	Kurtosis		0.147	0.281

Table F4:

Descriptive statistics of participants Years of Relevant Experience

v13 - 7: Years of industry relevant experience	Mean		4.63	0.081
	95% Confidence Interval for Mean	Lower Bound	4.47	
		Upper Bound	4.79	
	5% Trimmed Mean		4.74	
	Median		5.00	
	Variance		1.966	
	Std. Deviation		1.402	
	Minimum		1	
	Maximum		6	
	Range		5	
	Interquartile Range		2	
	Skewness		-0.866	0.141
	Kurtosis		-0.158	0.281

Table F5:

Descriptive statistics of participants distance from CEO

			Statistic	Std. Error
v2 - 1: Hierarchical distance from CEO	Mean		2.71	0.079
	95% Confidence Interval for Mean	Lower Bound	2.55	
		Upper Bound	2.87	
	5% Trimmed Mean		2.84	
	Median		3.00	
	Variance		1.865	
	Std. Deviation		1.366	
	Minimum		-1	
	Maximum		4	
	Range		5	
	Interquartile Range		2	
	Skewness		-1.105	0.141
	Kurtosis		0.866	0.281

Table F6:

Frequency statistics of participants distance from CEO

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-1 Other, please specify	18	6.0	6.0	6.0
	1 Ceo	27	9.0	9.0	15.0
	2 1-2 levels	74	24.7	24.7	39.7
	3 3-4 levels	68	22.7	22.7	62.3
	4 > 4 levels	113	37.7	37.7	100.0
	Total	300	100.0	100.0	

Table F7:

Descriptive statistics of number of Employees (Size of organization)

		Statistic	Std. Error	
Number of employees (Size of organization)	Mean	2.54	0.090	
	95% Confidence Interval for Mean	Lower Bound	2.36	
		Upper Bound	2.71	
		5% Trimmed Mean	2.49	
	Median	2.00		
	Variance	2.423		
	Std. Deviation	1.557		
	Minimum	1		
	Maximum	5		
	Range	4		
Interquartile Range	3			
Skewness	0.421	0.141		
Kurtosis	-1.394	0.281		

Table F8:

Frequency statistics of Number of Employees (Size of organization)

Please indicate number of employees (Size of organization)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 < 1,000	123	41.0	41.0	41.0
	2 1,000 – 5,000	43	14.3	14.3	55.3
	3 5,000 – 10,000	36	12.0	12.0	67.3
	4 10,000 – 50,000	46	15.3	15.3	82.7
	5 > 50,000	52	17.3	17.3	100.0
	Total	300	100.0	100.0	

Table F9:

Descriptive statistics of Number of Employees in IT Department

		Statistic	Std. Error	
Number of employees in IT department	Mean	2.04	0.086	
	95% Confidence Interval for Mean	Lower Bound	1.87	
		Upper Bound	2.21	
	5% Trimmed Mean	1.93		
	Median	1.00		
	Variance	2.233		
	Std. Deviation	1.494		
	Minimum	1		
	Maximum	5		
	Range	4		
	Interquartile Range	2		
	Skewness	1.130	0.141	
	Kurtosis	-0.318	0.281	

Table F10:

Frequency statistics of Number of Employees in IT Department

Number of employees in IT department					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 < 100	176	58.7	58.7	58.7
	2 100 – 250	42	14.0	14.0	72.7
	3 250 – 500	22	7.3	7.3	80.0
	4 500 – 1,000	14	4.7	4.7	84.7
	5 > 1,000	46	15.3	15.3	100.0
	Total	300	100.0	100.0	

Table F11:

Descriptive (Frequency) statistics of how IT is Budgeted

How IT is Budgeting					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cost center, with erratic/inconsistent/irregular/chaotic spending	30	10.0	16.5	16.5
	Cost center, by functional organization	88	29.3	48.4	64.8
	Cost center with some projects treated as investments	46	15.3	25.3	90.1
	Investment center	8	2.7	4.4	94.5
	Profit center, where IT generates revenues	10	3.3	5.5	100.0
	Total	182	60.7	100.0	
Missing	N/A or don't know	118	39.3		
Total		300	100.0		

Table F12:

Descriptive (Frequency) statistics of the Rational for IT Spending

		Rational for IT Spending			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Reduce costs.	25	8.3	12.4	12.4
	Increase productivity and efficiency as the focus.	77	25.7	38.1	50.5
	Traditional financial reviews- IT is seen as a process enabler.	25	8.3	12.4	62.9
	Business effectiveness is the focus. IT is seen as a process driver or business strategy enabler.	55	18.3	27.2	90.1
	Create competitive advantage and increase profit. Our business partners see value.	20	6.7	9.9	100.0
	Total	202	67.3	100.0	
Missing	N/A or don't know	98	32.7		
Total		300	100.0		

Table F13:

Descriptive (Frequency) statistics of Senior Level IT Steering Committee(s)

Senior Level IT Steering committee(s)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	We do not have formal/regular steering committee(s).	58	19.3	29.6	29.6
	We have committee(s) which meets informally on an as-needed basis.	35	11.7	17.9	47.4
	We have formal committees, which meet regularly and have emerging effectiveness.	46	15.3	23.5	70.9
	We have formal, regular committee meetings with demonstrated effectiveness.	24	8.0	12.2	83.2
	We have formal, regular committee meetings - include strategic business partners sharing decision-making responsibility	33	11.0	16.8	100.0
	Total	196	65.3	100.0	
Missing	N/A or don't know	104	34.7		
Total		300	100.0		

Table F14:

Descriptive (Frequency) statistics of how Projects are Prioritized

How IT Projects are Prioritized					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	In reaction to a business or IT need	48	16.0	24.0	24.0
	Determined by the IT function	20	6.7	10.0	34.0
	Determined by the business function	48	16.0	24.0	58.0
	Mutually determined between senior and mid-level IT and business management	31	10.3	15.5	73.5
	Mutually determined - with consideration of the priorities of any business partners/alliances	53	17.7	26.5	100.0
	Total	200	66.7	100.0	
Missing	N/A or don't know	100	33.3		
Total		300	100.0		

Table F15:

Descriptive (Frequency) statistics of IT Response to Business Needs

IT Response to Business Needs					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very weak	7	2.3	3.2	3.2
	Somewhat weak	41	13.7	18.6	21.7
	Neither weak nor strong	57	19.0	25.8	47.5
	Somewhat strong	78	26.0	35.3	82.8
	Very strong	38	12.7	17.2	100.0
	Total	221	73.7	100.0	
Missing	N/A or don't know	79	26.3		
Total		300	100.0		

Table F16:

Descriptive (Frequency) statistics of Business understanding by IT

		Business understand by IT			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Senior and mid-level IT managers do not understand the business.	11	3.7	5.3	5.3
	Senior and mid-level IT managers have a limited understanding of the business.	28	9.3	13.5	18.8
	Senior and mid-level IT managers have a good understanding of the business.	70	23.3	33.7	52.4
	Understanding of the business by all IT members is encouraged and promoted by senior managers.	61	20.3	29.3	81.7
	Understanding of the business is required (e.g., tied to performance appraisals) throughout the IT function.	38	12.7	18.3	100.0
	Total	208	69.3	100.0	
Missing	N/A or don't know	92	30.7		
Total		300	100.0		

Table F17:

Descriptive (Frequency) statistics of IT understanding by Business

		IT understanding by Business			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Senior and mid-level business managers do not understand IT.	10	3.3	4.7	4.7
	Senior and mid-level business managers have a limited understanding of IT.	67	22.3	31.8	36.5
	Senior and mid-level business managers have a good understanding of IT.	62	20.7	29.4	65.9
	Understanding of IT by all employees is encouraged and promoted by senior management.	45	15.0	21.3	87.2
	Understanding of IT is required (e.g., tied to performance appraisals) throughout the business.	27	9.0	12.8	100.0
	Total	211	70.3	100.0	
Missing	N/A or don't know	89	29.7		
Total		300	100.0		

Table F18:

Descriptive (Frequency) statistics of IT and Business Communications Style

		IT and Business Communications Style			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	One-way, from the business; formal and inflexible	11	3.7	5.3	5.3
	One-way, from the business; moderately informal and moderately flexible	35	11.7	16.7	22.0
	Two-way; formal and inflexible	42	14.0	20.1	42.1
	Two-way; moderately informal and moderately flexible	84	28.0	40.2	82.3
	Two-way; informal and flexible	37	12.3	17.7	100.0
	Total	209	69.7	100.0	
Missing	N/A or don't know	91	30.3		
Total		300	100.0		

Table F19:

Descriptive (Frequency) statistics of Leveraging Intellectual Assets by Knowledge Sharing between IT and Business

Leveraging Intellectual Assets by Knowledge Sharing between IT and Business					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Knowledge sharing is on an ad-hoc basis.	44	14.7	21.3	21.3
	Knowledge sharing is somewhat structured and/or structure is beginning to be created.	43	14.3	20.8	42.0
	There is structured sharing around key functional unit processes.	44	14.7	21.3	63.3
	There is formal sharing at the functional unit level and at the corporate level.	46	15.3	22.2	85.5
	There is formal sharing at the functional unit level, at the corporate level, and with business partners/alliances.	30	10.0	14.5	100.0
	Total	207	69.0	100.0	
Missing	N/A or don't know	93	31.0		
Total		300	100.0		

Table F20:

Statistics of the Role and Effectiveness of IT and Business Liaisons

Role and Effectiveness of IT and Business Liaisons					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	We do not use liaisons, or if we do, we do so on an ad-hoc, as needed basis.	78	26.0	37.5	37.5
	We regularly use liaisons - Liaisons are not usually used to facilitate relationship development.	46	15.3	22.1	59.6
	We regularly use liaisons - They occasionally facilitate relationship development.	32	10.7	15.4	75.0
	We regularly use liaisons - Their primary objective is to facilitate internal relationship development.	30	10.0	14.4	89.4
	We regularly use liaisons - Their primary objective is to facilitate relationship development across the business and it	22	7.3	10.6	100.0
	Total	208	69.3	100.0	
Missing	N/A or don't know	92	30.7		
Total		300	100.0		

Table F21:

Descriptive (Frequency) statistics of IT meeting the Organizations Strategic Goals

IT meeting the Organizations Strategic Goals					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very weak	6	2.0	2.8	2.8
	Somewhat weak	32	10.7	14.9	17.7
	Neither weak nor strong	60	20.0	27.9	45.6
	Somewhat strong	64	21.3	29.8	75.3
	Very strong	53	17.7	24.7	100.0
	Total	215	71.7	100.0	
Missing	N/A or don't know	85	28.3		
Total		300	100.0		

Table F22:

Descriptive (Frequency) statistics of Business Perception of IT

		Business Perception of IT			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A cost of doing business	65	21.7	30.7	30.7
	Emerging as an asset	23	7.7	10.8	41.5
	A fundamental enabler of future business activity	54	18.0	25.5	67.0
	A fundamental driver of future business activity	26	8.7	12.3	79.2
	A partner with the business that co-adapts/improvises in bringing value to the firm	44	14.7	20.8	100.0
	Total	212	70.7	100.0	
Missing	N/A or don't know	88	29.3		
Total		300	100.0		

Table F23:

Descriptive (Frequency) statistics of IT role in Strategic Business Planning

		IT role in Strategic Business Planning			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	IT does not have a role.	21	7.0	10.0	10.0
	IT is used to enable business processes.	71	23.7	33.8	43.8
	IT is used to drive business processes.	33	11.0	15.7	59.5
	IT is used to enable or drive business strategy.	45	15.0	21.4	81.0
	IT co-adapts with the business to enable/drive strategic objectives.	40	13.3	19.0	100.0
	Total	210	70.0	100.0	
Missing	6 N/A or don't know	90	30.0		
Total		300	100.0		

APPENDIX G. ADDITIONAL CROSSTABULATION STATISTICS

Table G1:

Crosstabulation for Hypothesis 1

		Crosstabulation of IT Governance (Organizational) structures and Levels of IT strategic alignment maturity						
		Levels of IT strategic alignment maturity						
		Level 1 Initial/ad- hoc process	Level 2 Committed process	Level 3 Established focused process	Level 4 Improved/ managed process	Level 5 Optimized process	Total	
IT Governance (Organizational) structures	Centralized	Count	14	34	37	31	14	130
		% within IT Governance (Organizational) structures	10.8%	26.2%	28.5%	23.8%	10.8%	100.0%
		% within Levels of IT strategic alignment maturity	70.0%	69.4%	55.2%	60.8%	63.6%	62.2%
	Decentralized	Count	6	10	17	8	1	42
		% within IT Governance (Organizational) structures	14.3%	23.8%	40.5%	19.0%	2.4%	100.0%
		% within Levels of IT strategic alignment maturity	30.0%	20.4%	25.4%	15.7%	4.5%	20.1%
	Federated	Count	0	5	13	12	7	37
		% within IT Governance (Organizational) structures	.0%	13.5%	35.1%	32.4%	18.9%	100.0%
		% within Levels of IT strategic alignment maturity	.0%	10.2%	19.4%	23.5%	31.8%	17.7%
Total	Count	20	49	67	51	22	209	
	% within IT Governance (Organizational) structures	9.6%	23.4%	32.1%	24.4%	10.5%	100.0%	
	% within Levels of IT strategic alignment maturity	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

Table G2:

Crosstabulation for Hypothesis 2

		Crosstabulation of Centralized IT Governance and Levels of IT strategic alignment maturity						
		Levels of IT strategic alignment maturity						
		Level 1 Initial/ad- hoc process	Level 2 Committe d process	Level 3 Established focused process	Level 4 Improved/ managed process	5 Level 5 Optimized process	Total	
Centra lized IT Gover nance	.00 No	Count	6	15	30	20	8	79
		% within Centralized IT Governance	7.6%	19.0%	38.0%	25.3%	10.1%	100.0 %
		% within Levels of IT strategic alignment maturity	30.0%	30.6%	44.8%	39.2%	36.4%	37.8%
1.00 Yes		Count	14	34	37	31	14	130
		% within Centralized IT Governance	10.8%	26.2%	28.5%	23.8%	10.8%	100.0 %
		% within Levels of IT strategic alignment maturity	70.0%	69.4%	55.2%	60.8%	63.6%	62.2%
Total		Count	20	49	67	51	22	209
		% within Centralized IT Governance	9.6%	23.4%	32.1%	24.4%	10.5%	100.0 %
		% within Levels of IT strategic alignment maturity	100.0%	100.0%	100.0%	100.0%	100.0%	100.0 %

Table G3:

Crosstabulation for Hypothesis 3

		Levels of IT strategic alignment maturity					Total	
		Level 1 Initial/ad- hoc process	Level 2 Committed process	Level 3 Established focused process	Level 4 Improved /managed process	Level 5 Optimized process		
Decentralized IT Governance	.00 No	Count	14	39	50	43	21	167
		% within Decentralized IT Governance	8.4%	23.4%	29.9%	25.7%	12.6%	100.0%
		% within Levels of IT strategic alignment maturity	70.0%	79.6%	74.6%	84.3%	95.5%	79.9%
	1.00 Yes	Count	6	10	17	8	1	42
		% within Decentralized IT Governance	14.3%	23.8%	40.5%	19.0%	2.4%	100.0%
		% within Levels of IT strategic alignment maturity	30.0%	20.4%	25.4%	15.7%	4.5%	20.1%
Total		Count	20	49	67	51	22	209
		% within Decentralized IT Governance	9.6%	23.4%	32.1%	24.4%	10.5%	100.0%
		% within Levels of IT strategic alignment maturity	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table G4:

Crosstabulation for Hypothesis 4

		Crosstabulation of Federalized IT Governance and IT strategic alignment maturity						
		v25 Question 19: Levels of IT strategic alignment maturity						
		Level 1 Initial/a d-hoc process	Level 2 Committ ed process	Level 3 Establishe d focused process	Level 4 Improved /managed process	Level 5 Optimized process	Total	
Federalize d IT Governanc e	.00 No	Count	20	44	54	39	15	172
		% within Federalized IT Governance	11.6%	25.6%	31.4%	22.7%	8.7%	100.0%
		% within Levels of IT strategic alignment maturity	100.0%	89.8%	80.6%	76.5%	68.2%	82.3%
	1.00 Yes	Count	0	5	13	12	7	37
		% within Federalized IT Governance	.0%	13.5%	35.1%	32.4%	18.9%	100.0%
		% within Levels of IT strategic alignment maturity	.0%	10.2%	19.4%	23.5%	31.8%	17.7%
Total	Count	20	49	67	51	22	209	
	% within Federalized IT Governance	9.6%	23.4%	32.1%	24.4%	10.5%	100.0%	
	% within Levels of IT strategic alignment maturity	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

Table G5:

Crosstabulation of IT Governance Structures and Participants Industry

		Crosstab				
		Governance (Organizational) structures				
		Centralized	Decentralized	Federated	Total	
Industry	-1 Other, please specify	Count	4	0	2	6
		% within Industry	66.7%	.0%	33.3%	100.0%
1	Government/Military	Count	36	10	14	60
		% within Industry	60.0%	16.7%	23.3%	100.0%
2	Finance/Banking/ Insurance	Count	41	16	8	65
		% within Industry	63.1%	24.6%	12.3%	100.0%
3	Manufacturing	Count	42	11	11	64
		% within Industry	65.6%	17.2%	17.2%	100.0%
4	Healthcare/Medical	Count	1	1	0	2
		% within Industry	50.0%	50.0%	.0%	100.0%
5	Biotech	Count	1	1	0	2
		% within Indicate industry	50.0%	50.0%	.0%	100.0%
6	Telecommunications	Count	5	3	2	10
		% within Industry	50.0%	30.0%	20.0%	100.0%
Total		Count	130	42	37	209
		% within Industry	62.2%	20.1%	17.7%	100.0%

APPENDIX H. DETAILED MULTIPLE REGRESSION ANALYSIS STATISTICS

		Sect2	Sect31	Sect32	Sect33	Sect34	Sect35	Levels of IT Strategic Alignment Maturity
Sect2	Pearson Correlation	1	.662	.693	.637	.579	.543	.533
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
Sect31	Pearson Correlation	.662	1	.782	.723	.648	.712	.596
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
Sect32	Pearson Correlation	.693	.782	1	.781	.764	.753	.625
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
Sect33	Pearson Correlation	.637	.723	.781	1	.742	.821	.541
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
Sect34	Pearson Correlation	.579	.648	.764	.742	1	.731	.549
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
Sect35	Pearson Correlation	.543	.712	.753	.821	.731	1	.511
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
Levels of IT Strategic Alignment Maturity organization today?	Pearson Correlation	.533	.596	.625	.541	.549	.511	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
Model Summary								
Model	R	R Square		Adjusted R Square	Std. Error of the Estimate			
1	.661 ^a	.437		.420	.866			

a. Predictors: (Constant), Sect35, Sect2, Sect34, Sect31, Sect33, Sect32

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	117.466	6	19.578	26.105	.000 ^a
	Residual	151.490	202	.750		
	Total	268.957	208			

a. Predictors: (Constant), Sect35, Sect2, Sect34, Sect31, Sect33, Sect32

b. Dependent Variable: IT Strategic Alignment Maturity

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.327	.241		1.354	.177
	Sect2	.156	.095	.127	1.638	.103
	Sect31	.305	.125	.227	2.451	.015
	Sect32	.290	.118	.272	2.465	.015
	Sect33	.007	.119	.006	.054	.957
	Sect34	.160	.103	.139	1.547	.123
	Sect35	-.034	.113	-.031	-.302	.763

a. Dependent Variable: IT Strategic Alignment Maturity Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.661 ^a	.437	.420	.866

a. Predictors: (Constant), Sect35, Sect2, Sect34, Sect31, Sect33, Sect32

Figure H1: IT Strategic Alignment Regression Analysis Pearson Correlation, ANOVA and coefficient.

APPENDIX I. STATISTICAL ASSESSMENT OF IT STRATEGIC ALIGNMENT AND
IT GOVERNANCE ATTRIBUTES

Table I1:

Statistical Measurement of IT's Contribution to the Business

Metrics for Measuring IT's Contribution to the Business				Valid Percent	Cumulative Percent
		Frequency	Percent		
Valid	The metrics and processes we have in place to measure IT are primarily technical	47	15.7	24.6	24.6
	We are equally concerned with technical and cost efficiency measures.	48	16.0	25.1	49.7
	We formally assess technical and cost efficiency using traditional financial measures	32	10.7	16.8	66.5
	We formally assess technical, cost efficiency, and cost effectiveness using traditional financial measures	35	11.7	18.3	84.8
	We use a multi-dimensional approach with appropriate weights given to technical, financial, operational, and human-relation	29	9.7	15.2	100.0
	Total	191	63.7	100.0	
Missing	N/A or don't know	109	36.3		
Total		300	100.0		

Table I2

Statistical Measurement of Business Contribution to the Business

Metrics for Measuring Business Contribution to the Business		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	We do not measure the value of our business investments, or do so on an ad-hoc basis	38	12.7	19.8	19.8
	We are concerned with cost efficiency measures at the functional organization level only.	42	14.0	21.9	41.7
	We formally use traditional financial measures, such as (ROI) and activity-based costing (ABC).	43	14.3	22.4	64.1
	We formally measure value based on the contribution to our customers.	45	15.0	23.4	87.5
	We use a multi-dimensional approach - technical, financial, operational, and human-related measures.	24	8.0	12.5	100.0
	Total	192	64.0	100.0	
Missing	N/A or don't know.	108	36.0		
Total		300	100.0		

Table I3:

Statistical Assessment and Review of IT investments

Assessment and Review of IT investments					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	We do not formally assess and/or review.	33	11.0	17.0	17.0
	We assess and/or review only after we have a business or IT problem	35	11.7	18.0	35.1
	Assessments and/or reviews are becoming routine occurrences.	39	13.0	20.1	55.2
	We routinely assess and/or review and have a formal process in place	48	16.0	24.7	79.9
	We routinely assess and/or review - make changes based on the results and measure the changes.	39	13.0	20.1	100.0
	Total	194	64.7	100.0	
Missing	N/A or don't know	106	35.3		
Total		300	100.0		

Organization's readiness for change					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	We tend to resist change.	31	10.3	14.4	14.4
	We recognize the need for change and change readiness programs are emerging.	62	20.7	28.7	43.1
	Change readiness programs - the functional unit level.	48	16.0	22.2	65.3
	Change readiness programs are in place at the corporate level.	31	10.3	14.4	79.6
	Change readiness programs are in place at the corporate level and we are proactive	44	14.7	20.4	100.0
	Total	216	72.0	100.0	
Missing	N/A or don't know	84	28.0		
Total		300	100.0		

Figure II: Organization's readiness for change.

Level of disruption caused by business and IT changes					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not readily transparent (very disruptive)	15	5.0	7.3	7.3
	Transparent at the functional level only	48	16.0	23.3	30.6
	Transparent at the functional level and emerging across all remote, branch, and mobile locations	45	15.0	21.8	52.4
	Transparent across the entire organization	61	20.3	29.6	82.0
	Transparent across the organization and to our business partners/alliances	37	12.3	18.0	100.0
	Total	206	68.7	100.0	
Missing	N/A or don't know	94	31.3		
Total		300	100.0		

Figure I2: Level of disruption caused by business and IT changes.

Integrated IT and business metrics to measure IT's contribution to the business					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	We do not measure the value of our IT business investments, or do so on an ad-hoc basis	40	13.3	20.9	20.9
	The value measurements for IT and business are not linked.	41	13.7	21.5	42.4
	The value measurements for IT and business are starting to be linked and formalized.	43	14.3	22.5	64.9
	We formally link the value measurements of IT and business.	47	15.7	24.6	89.5
	We use a multi-dimensional approach with appropriate weight given to IT and business measures.	20	6.7	10.5	100.0
	Total	191	63.7	100.0	
Missing	N/A or don't know	109	36.3		
Total		300	100.0		

Figure I3: Integrated IT and business metrics to measure IT contribution to the business.