

12-2011

# IT-BUSINESS STRATEGIC ALIGNMENT: ESSAYS EXAMINING TYPES OF ALIGNMENT AND THEIR RELATIONSHIP WITH FIRM PERFORMANCE

Jennifer Gerow

Clemson University, [jgerow.phd@gmail.com](mailto:jgerow.phd@gmail.com)

Follow this and additional works at: [https://tigerprints.clemson.edu/all\\_dissertations](https://tigerprints.clemson.edu/all_dissertations)



Part of the [Management Sciences and Quantitative Methods Commons](#)

---

## Recommended Citation

Gerow, Jennifer, "IT-BUSINESS STRATEGIC ALIGNMENT: ESSAYS EXAMINING TYPES OF ALIGNMENT AND THEIR RELATIONSHIP WITH FIRM PERFORMANCE" (2011). *All Dissertations*. 851.

[https://tigerprints.clemson.edu/all\\_dissertations/851](https://tigerprints.clemson.edu/all_dissertations/851)

This Dissertation is brought to you for free and open access by the Dissertations at TigerPrints. It has been accepted for inclusion in All Dissertations by an authorized administrator of TigerPrints. For more information, please contact [kokeefe@clemson.edu](mailto:kokeefe@clemson.edu).

**IT-BUSINESS STRATEGIC ALIGNMENT: ESSAYS  
EXAMINING TYPES OF ALIGNMENT AND THEIR  
RELATIONSHIP WITH FIRM PERFORMANCE**

---

A Thesis  
Presented to  
the Graduate School of  
Clemson University

---

In Partial Fulfillment  
of the Requirements for the Degree  
Doctor of Philosophy  
Management

---

by  
Jennifer E. Gerow  
November 18, 2011

---

Accepted by:  
Dr. Varun Grover, Committee Co-Chair  
Dr. Jason Thatcher, Committee Co-Chair  
Dr. Richard Klein  
Dr. Philip Roth

## **ABSTRACT**

While Information-Technology (IT)-Business Strategic Alignment (hereafter referred to as alignment) continues to be a topic of great concern to both researchers and practitioners alike, it is often misunderstood and, as such, many organizations find alignment difficult to achieve. In particular, alignment is often defined in many different ways, its operational measures are used inconsistently, and it is unclear how it can be attained. In this dissertation, we assert that researchers should include explicit references to the type of alignment under study, that adequate and consistent operational measures of each alignment type are necessary, and that we need a better understanding of the CIO attributes that may facilitate alignment. Each of these points is addressed in three separate essays, as discussed in the following paragraphs.

In our first essay, we conducted a review and meta-analysis of the alignment literature to gain a better understanding of the types of alignment that have been examined. In particular, we probed the inter-relationships between alignment, the context, and firm performance. We found distinct relationships between three types of alignment and three measures of firm performance. We also found social alignment is a precursor to alignment within firms. Furthermore, a moderator analysis suggested sampling and measurement are an additional source of conflicting findings in the alignment literature. Through this essay, we contribute to the literature by developing clear definitions of alignment's dimensions, clarifying the relationship between alignment and types of performance outcomes, and offering insight into sources of inconsistencies

in alignment research. We believe this first essay offers a basis for more consistent treatment of alignment concepts in future IT research.

In our second essay, we report on the development of operational measures designed to capture six different types of alignment. These instruments are intended to be a tool for studying the alignment between IT and business strategies (i.e. intellectual alignment), between IT and business infrastructures and processes (i.e. operational alignment), and across these two domains such that strategies are linked with infrastructures and processes (i.e. 4 types of cross-domain alignment). As such, this essay proposes definitions for each type of alignment and develops operational measures for each construct, each possessing desirable psychometric properties.

Finally, we apply the Power-Dependence and Political Perspectives in our third essay to explain the relationship between power, political skill, and the CIO's influence over the executive team's commitment to strategic and technical IT initiatives. Our results suggest structural power (i.e. the CIO's formal position in the firm), expert power (i.e. the CIO's business and technical knowledge), and prestige power (i.e. the important connections the CIO has established) relate to the CIO's influence over the executive team's commitment to IT initiatives. We also found political skill positively moderates the relationship between the CIO's power and influence over the executive team's commitment to IT initiatives.

Taken together, our literature review provides conceptual clarity about the nature of alignment. In our construct development essay, we gained operational clarity such that researchers can study the different types of alignment and their relationships with other

constructs like performance. Finally, our CIO study improves our understanding of the manifestation of alignment through CIO influence on major IT-business initiatives.

**Key Words:** IT-business strategic alignment, alignment paradox, power, political skill

## **ACKNOWLEDGEMENTS**

First, I thank my best friend and Savior, Jesus Christ, for giving me this awesome opportunity to earn a PhD. Without you, I wouldn't have been able to complete this extremely difficult task. You have shown me the true meaning of both grace and power: Your grace is sufficient for me, for Your power is made perfect in weakness (2 Corinthians 12:9).

Second, thank you to my husband, Charles Gerow, for his prayers and emotional support. You endured many tears throughout this process, and I am forever grateful to you for standing firm through it all. I couldn't have done this without the support you gave me and the sacrifices you made.

Third, I thank my advisors, Dr. Varun Grover and Dr. Jason Thatcher, for reading thousands of pages and providing feedback that made me into a better academic and researcher. Without your dedication to the IS field and your students, this dissertation would not have been possible.

I also thank my committee members, Dr. Phil Roth and Dr. Rich Klein, for taking the time to read my dissertation and provide constructive feedback so I could further improve my work. Thank you also to Dr. Russ Purvis for encouraging me to apply for the PhD program; you changed my life.

Finally, I thank my family and friends for all your prayers, support, and love. Specifically, a big "Thank You!" to my parents, Dwight and Lori Vicars; my sister, Melissa Vicars; my grandma and uncle, Helen and Bob Kolski; my in-laws, Vick and Stella Messier; and my friends: Kristen Fleming, Cheryl LaGrone, Jason and Andi

Czepiga, Kevin and Maria Kithcart, and Jane Motsinger and all our Bible study groups. I couldn't have done this without you.

## **DEDICATION**

For all his support and love through this process, I dedicate this dissertation to my husband, Charles E. Gerow. You have earned this PhD too. Thank you.



## **TABLE OF CONTENTS**

ABSTRACT.....	ii
ACKNOWLEDGEMENTS.....	v
DEDICATION.....	vii
TABLE OF CONTENTS.....	viii
LIST OF TABLES.....	xiii
LIST OF FIGURES.....	xv
PROLOGUE.....	1
ESSAY 1 - ABSTRACT.....	8
INTRODUCTION.....	9
NARRATIVE REVIEW.....	13
Alignment and Its Dimensions.....	13
Defining Firm Performance.....	16
Theoretical Perspectives.....	18
The Contingency Perspective.....	19
Resource-Based View of the Firm.....	21
A Model of Alignment: Antecedents and Outcomes.....	24
Intellectual Alignment with Firm Performance.....	24
Operational Alignment with Firm Performance.....	27
Cross-Domain Alignment with Firm Performance.....	29
Social Alignment.....	30
Correlates of Alignment.....	32
Methodological Moderators.....	38
META-ANALYSIS.....	41
Method.....	42
Sources of Data.....	42
Inclusion Criteria.....	44
Coding Procedure.....	46
Meta-Analytic Approach.....	48
Results.....	52
Detailed Explanation of the Columns in the Meta-Analysis Tables.....	52
Meta-Analyzed Relationships.....	53

Moderator Analysis: Intellectual Alignment .....	56
DISCUSSION.....	59
Research Question 1: How should we represent or conceptualize alignment? .....	59
Research Question 2: What is the effect of alignment on firm performance?.....	62
Research Question 3: Do other factors confound the relationship between alignment and firm performance? .....	63
Research Question 4: Do methodological issues obscure our understanding of the relationship between alignment and firm performance? .....	67
Limitations .....	71
Implications for Practice .....	71
CONCLUSION.....	73
ESSAY 2 - ABSTRACT.....	76
INTRODUCTION .....	77
DEFINING ALIGNMENT.....	81
Intellectual Alignment .....	82
Operational Alignment.....	83
Cross-Domain Alignment.....	85
Using SAM as a Framework.....	87
INSTRUMENT DEVELOPMENT PROCESS.....	88
Creating the Item Pool .....	89
Q-Sorting Rounds .....	94
Pre-Test, Purification, and Pilot Test.....	102
Pilot Study Reliability, Convergent Validity, and Discriminant Validity Analyses...	106
Further Instrument Development, Testing, and Purification .....	112
Financial Performance .....	120
Control Variables .....	121
SURVEY ADMINISTRATION.....	122
Research Design.....	123
Reliability, Convergent Validity, and Discriminant Validity Analyses .....	127
Predictive Validity Analyses.....	132
Sobel Test for Mediation .....	140
Control Variable Results.....	141
Assessment of Common Method Bias Threat .....	141

LIMITATIONS.....	143
ALIGNMENT RESULTS .....	145
CONCLUSION.....	149
ESSAY 3 - ABSTRACT.....	151
INTRODUCTION .....	152
THEORETICAL PERSPECTIVES.....	155
Power-Dependence Perspective.....	155
Political Perspective.....	157
A MODEL OF CIO INFLUENCE ON EXECUTIVE TEAM COMMITMENT .....	159
Power and Influence Outcomes .....	161
Structural Power.....	161
Expert Power.....	162
Prestige Power .....	164
Political Skill as a Moderator.....	165
Structural Power Moderated by Political Skill .....	166
Expert Power Moderated by Political Skill .....	167
Prestige Power Moderated by Political Skill .....	168
Control Variables .....	170
RESEARCH METHOD.....	172
Instrument Development Process .....	172
Item Creation .....	173
Scale Development .....	174
Q-Sorting Round.....	175
Instrument Testing .....	176
SURVEY ADMINISTRATION.....	177
Further Instrument Development and Testing .....	177
Research Design.....	183
Sample Size.....	183
Outlier Analysis .....	185
Full Study Reliability, Convergent Validity, and Discriminant Validity Analyses....	187
Non-Response Bias.....	198
Assessment of Common Method Bias Threat .....	199

Design of the Study's Procedures.....	199
Statistical Controls.....	200
Hypothesis Testing.....	201
Main Effects Analysis.....	203
Moderation Effects Analysis.....	204
Control Variable Results.....	207
DISCUSSION.....	208
Key Findings.....	208
Implications for Theory and Practice.....	209
Limitations & Suggestions for Future Research.....	216
CONCLUSION.....	220
Appendix A – Nuanced Definitions of Alignment in the Extant Literature.....	223
Appendix B – Studies Included in the Review.....	225
Appendix C – Alignment Models Based on the Contingency Perspective.....	232
Appendix D – Alignment Antecedents/Correlates Supported by RBV.....	233
Appendix E – Social Alignment as an Antecedent in the Extant Alignment Literature.....	234
Appendix F – Example E-mail to Authors for Unpublished Correlation Tables.....	236
Appendix G – Example E-mail to Authors for Correlation Tables in Published Papers.....	237
Appendix H – Meta-Analysis Results for Alignment as a Single Dimension/Higher Order Construct.....	237
APPENDIX I: Alignment Definitions.....	237
APPENDIX J: Existing Alignment Items.....	240
APPENDIX K: Q-sort Judges' Panel Backgrounds and Qualifications.....	243
APPENDIX L: Complete Instrument.....	245
APPENDIX M: Statistical Controls.....	254
APPENDIX N: Pilot Study.....	254
Pilot Study Reliability, Convergent Validity, and Discriminant Validity Analyses.....	259
Preliminary Model Assessment.....	285
APPENDIX O: Item Stems Included in the Fully Study.....	289
APPENDIX P: Essay 3 Confirmatory Factor Analysis.....	290
APPENDIX Q: Item-Level Correlations.....	292
APPENDIX R: Survey Cover Letter.....	305
APPENDIX S: Full GLM Analysis Results.....	307

Multivariate GLM.....	307
Univariate GLM.....	309
REFERENCES .....	312

## LIST OF TABLES

Table 1: Definitions of Strategic Alignment .....	16
Table 2: Definitions of Firm Performance.....	17
Table 3: Number of Studies (k) per Relationship.....	18
Table 4: Takeaways from Alignment Perspectives .....	23
Table 5: Research on the Relationship between Strategic and Social Alignment...	32
Table 6: Findings for the Correlates of Alignment in the Alignment Literature ...	37
Table 7: Definitions for Constructs in Alignment's Nomological Net .....	38
Table 8: Essay 1 Moderator Definitions.....	38
Table 9: Journals Included in the Detailed Search.....	43
Table 10: Number and Percentage of Excluded Studies by Inclusion Criteria .....	45
Table 11: Coded Information for Essay 1 .....	50
Table 12: Meta-Analysis Results for Alignment .....	55
Table 13: Moderator Meta-Analysis Results for Intellectual Alignment .....	57
Table 14: Alignment to Performance Dimension Matrix .....	66
Table 15: Key Findings and Research Implications for Essay 1 .....	69
Table 16: Implications for Practice from Essay 1 .....	73
Table 17: Alignment Items for Essay 2 Q-sorts.....	91
Table 18: Construct Definitions for Essay 2 .....	95
Table 19: Item Placement Ratios - First Sorting Round.....	96
Table 20: Item Placement Ratios - Second Sorting Round.....	97
Table 21: Adjusted Definitions for the Alignment Sorting Exercises .....	98
Table 22: Item Placement Ratios - Third Sorting Round .....	99
Table 23: New Definitions for Alignment for Essay 2 .....	100
Table 24: Item Placement Ratios - Fourth Sorting Round.....	102
Table 25: Items Included in the Pilot Test for Essay 2 .....	103
Table 26: Demographic Statistics for the Pilot Study of Essay 2 (n=35) .....	105
Table 27: Confirmatory Factor Analysis for the Pilot Study for Essay 2 .....	106
Table 28: Reliability and Normality Test Results for the Essay 2 Pilot Study .....	108
Table 29: Convergent Validity Test for the Essay 2 Pilot Study .....	109
Table 30: Discriminant Validity Analysis for the Essay 2 Pilot Study .....	110
Table 31: Construct Correlation Matrix for the Essay 2 Pilot Study.....	111
Table 32: Items Included in the Essay 2 Full Study .....	116
Table 33: Stems Included in the Essay 2 Full Study .....	119
Table 34: Control Variables for Essay 2.....	122
Table 35: Research Now CIO Panel Revenue Distribution .....	124
Table 36: Research Now CIO Panel Industry Distribution .....	124
Table 37: Research Now CIO Panel Regional Distribution .....	125
Table 38: Demographic Statistics for Essay 2 (n=140).....	127
Table 39: Confirmatory Factor Analysis Results for the Essay 2 Full Study.....	128
Table 40: Reliability and Normality Test Results for the Essay 2 Full Study .....	129
Table 41: Convergent Validity Test for the Essay 2 Full Study.....	130
Table 42: Discriminant Validity Analysis for the Essay 2 Full Study .....	133
Table 43: Construct Correlation Matrix for the Essay 2 Fully Study.....	137

Table 44: Sobel Test for Essay 2 .....	140
Table 45: Control Variable Results for Essay 2.....	141
Table 46: Control Variables for Essay 3.....	171
Table 47: Item Adoption for Essay 3 .....	173
Table 48: Items for Q-sort in Essay 3.....	173
Table 49: Item Placement Ratios for Essay 3.....	176
Table 50: Items Included in the Full Study for Essay 3.....	178
Table 51: Demographic Statistics for Essay 3 (n=127) .....	184
Table 52: Essay 3 Full Study Psychometric Properties .....	187
Table 53: EFA Loadings for the Essay 3 Full Study .....	190
Table 54: Convergent Validity Test for Essay 3.....	194
Table 55: Discriminant Validity – Latent Variable Matrix for Essay 3.....	196
Table 56: Discriminant Validity – Construct-Level Latent Variable Matrix for Essay 3 .....	197
Table 57: Non-Response Bias Analysis Results for Essay 3.....	198
Table 58: Summary of Hypothesis Testing for Essay 3.....	205
Table 59: Control Variable Results for Essay 3.....	207
Table 60: Implications for Research and Practice for Essay 3 .....	217
Table I1: Various Intellectual Alignment Definitions .....	237
Table I2: Various Operational Alignment Definitions .....	238
Table I3: Various Cross-Domain Alignment Definitions .....	239
Table N1: Items for Pre-test and Pilot Study for Essay 3 .....	255
Table N2: Demographic Statistics for Essay 3 Pilot (n=35) .....	258
Table N3: EFA Results for Essay 3 Pilot Study.....	260
Table N4: EFA Loadings for the Essay 3 Pilot Study .....	262
Table N5 (cont): Convergent Validity Test for the Essay 3 Pilot Study .....	264
Table N6: Discriminant Validity Analysis for the Essay 3 Pilot Study.....	265
Table N7: Discriminant Validity – Latent Variable Matrix for the Essay 3 Pilot Study.....	271
Table N8: EFA Results after Removing Items for the Essay 3 Pilot Study .....	272
Table N9: EFA Loadings after Removing Items for the Essay 3 Pilot Study .....	273
Table N10: CFA after Removing Items for the Essay 3 Pilot Study.....	275
Table N11: Convergent Validity Test after Removing Items for the Essay 3 Pilot Study.....	277
Table N12: Discriminant Validity Analysis after Removing Items for the Essay 3 Pilot Study.....	280
Table N13: Discriminant Validity – Latent Variable Matrix for the Essay 3 Pilot Study.....	285
Table Q1: Discriminant Validity Analysis for the Essay 3 Full Study .....	292

## LIST OF FIGURES

Figure 1: Integrated Dissertation .....	3
Figure 2: Model for Essay 1.....	4
Figure 3: Henderson and Venkatraman's (1993; 1999 p476) Strategic Alignment Model.....	5
Figure 4: Model for Essay 3.....	6
Figure 5: Proposed Model with Hypotheses.....	24
Figure 6: Workflow of the Meta-Analysis Procedure .....	43
Figure 7: Illustrated Hypothesis Results .....	60
Figure 8: Henderson and Venkatraman's (1993; 1999 p476) Strategic Alignment Model .....	82
Figure 9: Alignment Timeline .....	87
Figure 10: Item Development Process .....	89
Figure 11: Diagram of the Types of Alignment.....	101
Figure 12: The Difference Between Reliability and Validity .....	114
Figure 13: Predictive Validity Results – Strategy Execution Alignment Perspective .....	138
Figure 14: Predictive Validity Results – Technology Transformation Alignment Perspective .....	138
Figure 15: Predictive Validity Results – Competitive Potential Alignment Perspective .....	139
Figure 16: Predictive Validity Results – Service Level Alignment Perspective ...	139
Figure 17: Conceptual Model .....	159
Figure 18: Essay 3 Research Mode 1.....	170
Figure 19: Outlier Analysis - Technical IT Initiatives as the Dependent Variable (Full).....	186
Figure 20: Outlier Analysis - Strategic IT Initiatives as the Dependent Variable (Full).....	186
Figure 21: Essay 3 Full Study Main Effects Results.....	204
Figure 22: Essay 3 Full Study Moderator Analysis .....	205
Figure M1: Essay 3 Pilot Test Outlier Analysis.....	286
Figure M2: Essay 3 Pilot Study Results.....	287
Figure M3: Essay 3 Pilot Study Results – Moderator Analysis.....	288



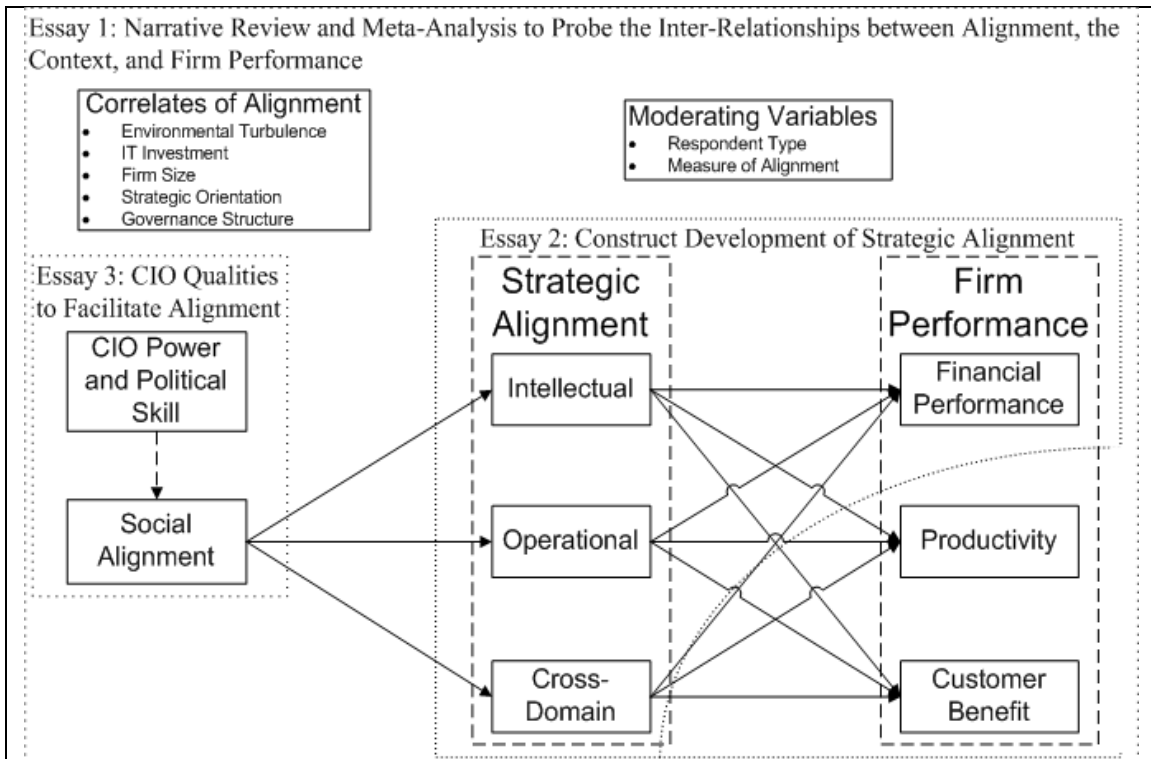
## **PROLOGUE**

Alignment is broadly defined as the fit or integration between the management of both IT and the business. Since many researchers and practitioners believe alignment will lead to increased performance, alignment has been considered a top management concern for IT and company executives for three decades. As such, many companies have created a high-ranking IT professional position, the Chief Information Officer (CIO), to try to facilitate the alignment process. However, alignment has been an elusive goal for many organizations, and research examining the relationship between alignment and performance has produced conflicting findings (i.e. an alignment paradox). Additionally, many CIOs lack the influence over their executive teams that could facilitate alignment. This paradox caused us to question: *why doesn't alignment always generate the desired level of firm performance* and *what CIO attributes help facilitate alignment?*

To address these questions, we draw on Henderson and Venkatraman's (1993; 1999) Strategic Alignment Perspective to inform our investigation of alignment. In their Strategic Alignment Model, Henderson and Venkatraman introduced three types of alignment: intellectual, operational, and cross-domain. Intellectual refers to the alignment between IT and business strategies; operational refers to the alignment between IT and business infrastructures and processes; and cross-domain refers to the bridging of strategies and infrastructures and processes. Although researchers often refer to the broader conceptualizations of alignment, they often assess different types of alignment and measure alignment inconsistently across the different types such that the literature may fail to converge on a shared understanding of alignment (Bergeron et al. 2001; Powell 1992).

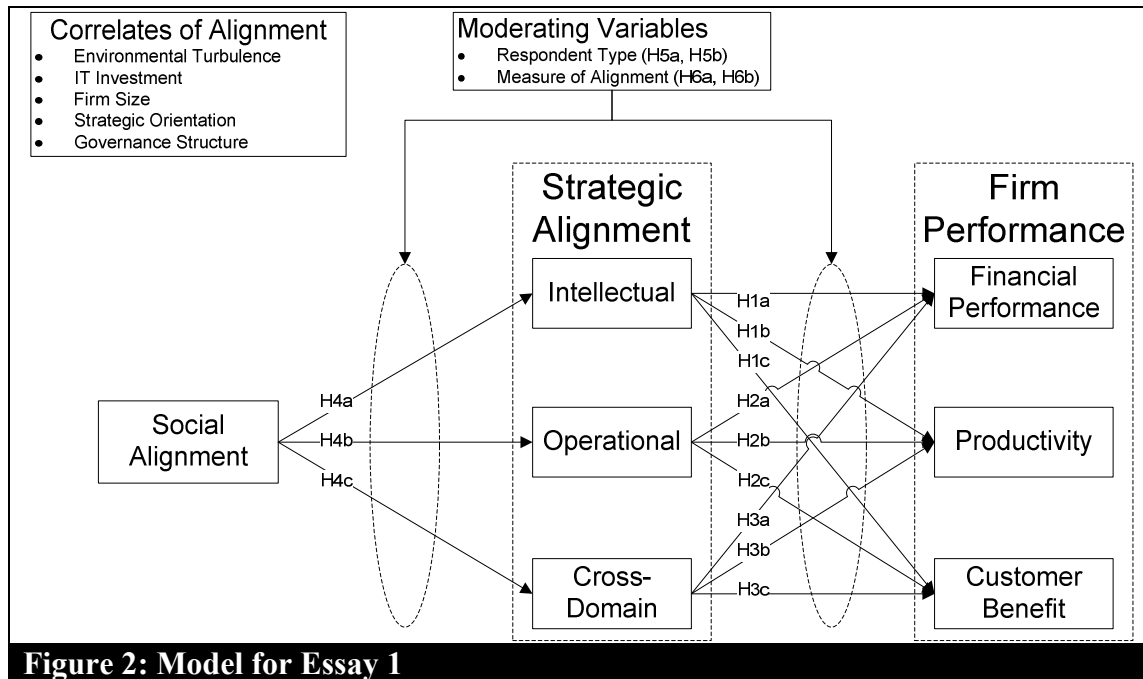
We also draw upon Emerson's (1962) Power-Dependence Perspective and Eisenhardt and Zbaracki's (1992) Political Perspective to explain the relationship between the CIO's attributes and influence on the executive team's commitment to IT initiatives. Specifically, we use these perspectives to capture how executive teams may depend on their CIOs in political business environments. In particular, these teams may require CIO competence and connections (i.e. motivational investment from Emerson's definition of dependence) and may only have ready access to this information when their CIOs are part of the executive team (i.e. the availability component of Emerson's dependence definition). Additionally, political skill may be one way a CIO can enhance these dependencies (i.e. political activity from the Political Perspective).

To advance the alignment literature, the objectives of this dissertation are 1) *to probe the inter-relationships between alignment, the context, and firm performance*, 2) *build upon the existing alignment framework and statistically test operational measures of the different types of alignment*, and 3) *to identify CIO qualities that may enhance the CIO's ability to influence the executive team and facilitate alignment*. To meet these objectives, we developed a three essay dissertation as illustrated in Figure 1. Each essay is addressed individually in the following paragraphs.



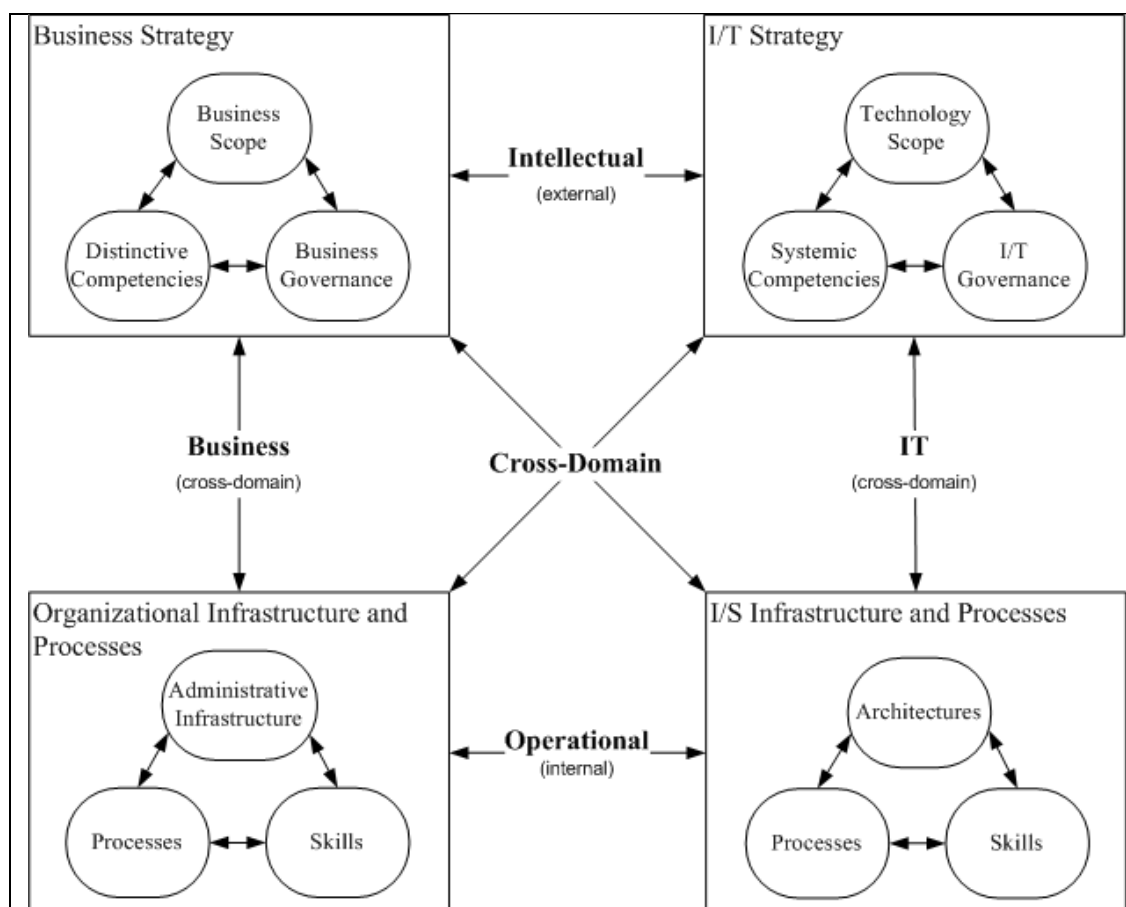
**Figure 1: Integrated Dissertation**

The *first essay* in this dissertation is designed to address our first objective. It is a review of the alignment literature. We identified 184 articles for the narrative review and 64 for the meta-analysis. Using the Hunter and Schmidt (1990; 2004) approach, we statistically combined the results from independent studies in order to examine dimensions of strategic alignment and their relationships with the dimensions of firm performance (see Figure 2). This first essay is important because it offers an opportunity to examine sources of inconclusive findings such as the competing conceptualizations of alignment and firm performance.



**Figure 2: Model for Essay 1**

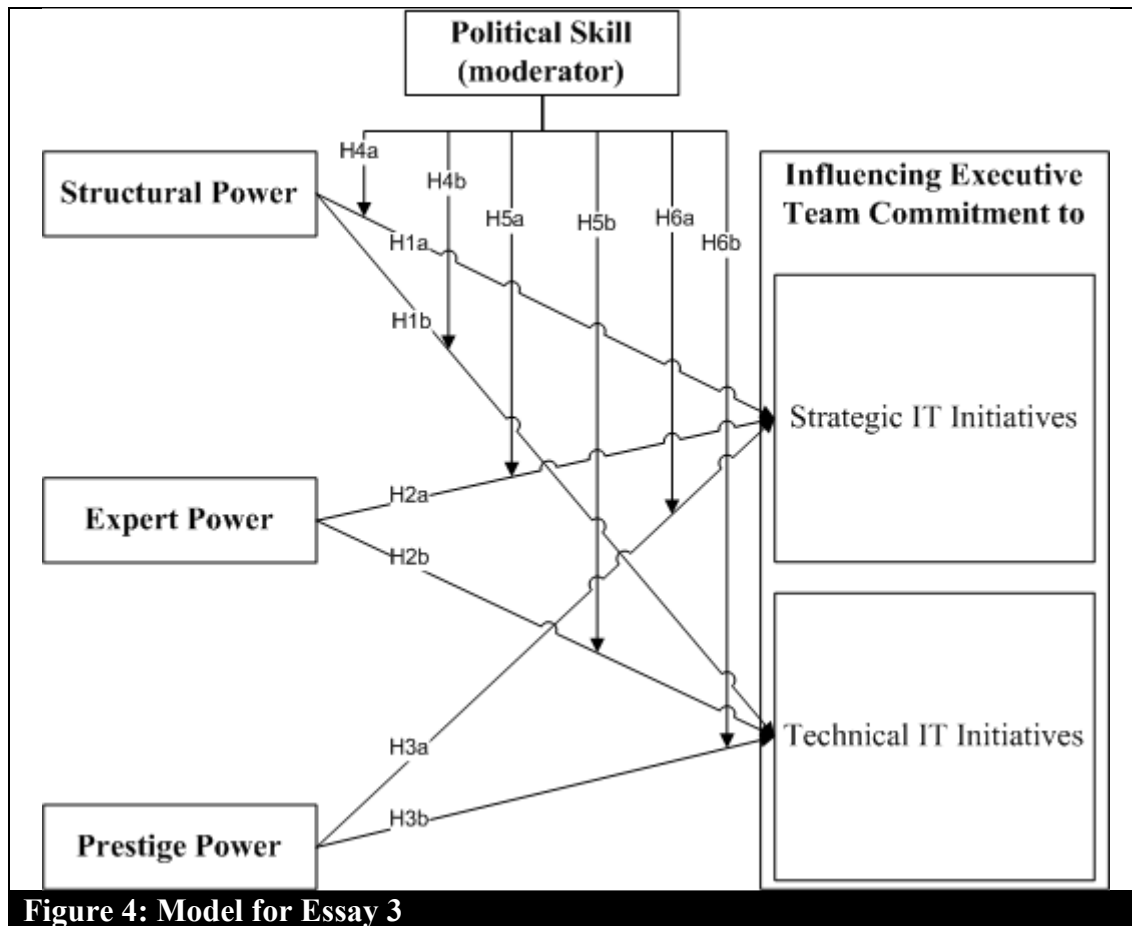
The *second essay* builds on our meta-analytic findings by building upon the existing Strategic Alignment Model (see Figure 3) and empirically validating operational measures for each type of alignment. Through extensive q-sorts, pre-tests, pilot tests, and a full survey of 140 CIOs, we developed comprehensive definitions for each type of alignment, created a 38-item instrument with desirable psychometric properties to measure alignment, and tested Henderson & Venkatraman's four types of cross-domain alignment: strategy execution, technology transformation, competitive potential, and service level. Taken together, this essay shed light on the robustness of the Strategic Alignment Model and provides the scales necessary to develop a cumulative research tradition.



**Figure 3: Henderson and Venkatraman's (1993; 1999 p476) Strategic Alignment Model**

Finally, the *third essay* examines the relationship between power, political skill, and the CIO's influence over the executive team's commitment to strategic and technical IT initiatives (see Figure 4). Using a cross-sectional survey of 127 CIOs, we found structural power (i.e. the CIO's formal position in the firm), expert power (i.e. the CIO's business and technical knowledge), and prestige power (i.e. the important connections the CIO has established) relate to the CIO's influence over the executive team's commitment to IT initiatives. We also found political skill positively moderates the relationship

between the CIO's power and influence over the executive team's commitment to IT initiatives.



**Figure 4: Model for Essay 3**

In summary, the analysis in essay 1 consolidates the diverse and inconsistent research on alignment and contributes a deeper understanding of the factors that drive alignment. Essay 2 adds to this research by providing a consistent operationalization for the different types of alignment and empirically tests a comprehensive alignment model to establish the relationships between the types of alignment and firm performance. Finally, essay 3 addresses the practical ways CIOs can impact alignment by examining the qualities CIOs should pursue to influence their firms' executive team members.

Taken together, these three essays give future researchers the foundation and tools to consider the 6 distinct types of alignment and their unique relationships with different antecedents and consequents. For practitioners, this research helps them make better judgments about what type of alignment to pursue to achieve their desired outcome (e.g. profitability) and gives CIOs a better understanding about what types of qualities they should pursue to facilitate the alignment process in their firms.

The remainder of this dissertation is organized as follows. First, we present our literature review and meta-analysis entitled "Looking toward the Future of IT-Business Strategic Alignment through the Past: A Meta-Analysis." Then, we introduce our construct development essay entitled "Six Types of IT-Business Strategic Alignment: An Investigation of the Constructs and Their Measurement." Finally, we discuss CIO attributes that may facilitate alignment in our essay entitled "Do CIOs Have What It Takes to Influence the Executive Team's Commitment to IT Initiatives?"

# **ESSAY 1: Looking Toward the Future of IT-Business Strategic Alignment through the Past: A Meta-Analysis**

## **ESSAY 1 - ABSTRACT**

Research examining the relationship between IT-business strategic alignment (hereafter referred to as alignment) and firm performance has produced conflicting findings (i.e. an alignment paradox). We speculate the alignment and performance link is inconsistent because it is comprised of multiple conceptually related, yet distinct, dimensions. Additionally, the level of alignment is contingent upon firm-specific social, environmental, strategic, and structural factors. To understand conditions under which alignment will positively relate to performance, we conducted a review of the literature and a meta-analysis that probes the inter-relationships between alignment, the context, and performance. We found dimensions of alignment demonstrate distinct relationships with the three different measures of performance. Also, we found social alignment is a precursor to alignment within firms. In addition, a moderator analysis suggests sampling and measurement are an additional source of conflicting findings in the alignment literature. To the best of our knowledge, this is the first study to combine a narrative review and meta-analysis to objectively evaluate the alignment literature. Through this, we contribute to the literature by developing clear definitions of alignment's dimensions, clarifying the relationship between alignment and types of performance outcomes, and offering insight into sources of inconsistencies in alignment research. We believe this paper offers a basis for more consistent treatment of alignment in future IT research.

**Key Words:** alignment, business-IT strategic alignment, alignment paradox, IT value, productivity paradox, meta-analysis, review



## **INTRODUCTION**

For the past thirty years, IS executives have identified IT-business strategic alignment (hereafter referred to as alignment) as a top management concern (Khaiata and Zualkernan 2009; Luftman and Ben-Zvi 2010). Alignment research has focused on understanding how aligning business and IT generates value for firms (Celuch et al. 2007; Chan and Reich 2007; Powell 1992). On the one hand, cultivating alignment between business and IT strategies could increase profitability and generate a sustainable competitive advantage (Kearns and Lederer 2003). On the other hand, failure to align could result in wasted resources and failed IT initiatives leading to adverse financial and organizational outcomes (Chen et al. 2010a; Ravishankar et al. in press). Due to alignment's implications, managers consider alignment a priority for their firms (Avison et al. 2004).

To help foster alignment, practitioners have devoted substantial attention to identifying how CIOs may leverage alignment to generate value for the firm. For example, magazines such as *CIO Magazine* have published special issues examining alignment (e.g. Editor 2001) and continue to direct attention to the subject (e.g. Johnson 2009). Additionally, practitioner books focus on innovation and efficiencies derived from alignment such as improved decision-making, automation of internal business processes, or improving customer satisfaction (Hansen 2009; Hunter and Westerman 2009). Practitioners' report that they view alignment as a means to develop firms' competitive capabilities, such as improving work-flow and incorporating IT into strategic thinking (Austin et al. 2009; Weill and Ross 2009).

Consistent with the practitioner literature, academics frequently emphasize alignments' positive aspects in theoretical frameworks and empirical research. In general, alignment research focuses on the improvements to firm performance (e.g. Cragg et al. 2002; Raymond et al. 1995; Rivard et al. 2006) such as increased sales revenue (Kearns 2005; Kunnathur and Shi 2001), improving operational efficiency (Oh and Pinsonneault 2007; Premkumar and King 1992), cost reductions (Chang et al. 2008; Duncan 1995; Johnson and Lederer 2010), and enhancements to customer value (Broadbent et al. 1999b; Celuch et al. 2007; Duncan 1995). Research suggests "aligned" firms are more likely to invest in IT and allocate resources to projects related to the overall business objectives (Cumps et al. 2009; Lederer and Mendelow 1989). Aligned firms leverage IT to respond to and exploit opportunities in the market, increase profitability, and create a sustainable competitive advantage (Avison et al. 2004; Cumps et al. 2009; Papp 1999). However, some research has found aligned firms report no improvement, or even a decline, in performance (i.e. an "alignment paradox") (Palmer and Markus 2000; Tallon 2003). These studies suggest alignment can lead to stagnation, strategic inflexibility, and a competitive disadvantage (e.g. Benbya and McKelvey 2006; Chen et al. 2010a; Tallon 2007a). Some argue alignment may result in too rigid a firm, where tight links between business and IT restricts the firm's ability to recognize change, reduces strategic flexibility, and inhibits its ability to respond to environmental change (Benbya and McKelvey 2006; Cumps et al. 2009; Powell 1992; Smaczny 2001; Tallon and Kraemer 2003). A firm may find itself in this "rigidity trap" because the alignment process is too time-consuming, costly, and formal to enable quick responses to changing market

conditions (Chen et al. 2010a; Kearns and Lederer 2003; Tallon 2007a). This problem becomes most apparent in firms that too narrowly customize IT systems to meet current strategic needs; this tight alignment results in an inflexible infrastructure that does not reflect standards and is costly to update (Shpilberg et al. 2007).

In summary, research suggests equivocal implications of alignment. Alignment may lead to positive or negative outcomes for firms. Given alignment's potential positive outcomes, and ongoing practitioner interest, this review's broad objective is *to understand why alignment doesn't always lead to firm performance*. Therefore, we address the following research questions:

- *How should we represent or conceptualize alignment?* Although alignment has been studied extensively, one possible source of contradictory findings is that scholars use inconsistent definitions of alignment (Preston and Karahanna 2009). For example, some indicate "alignment" is the linking of IT and business strategies (e.g. Lee et al. 2004; Tan and Gallupe 2006). Others define the same term, "alignment", as the fit between IT and business infrastructures and processes (e.g. Brown 1999; Cragg et al. 2007). Still other researchers refer to "alignment" as the simultaneous integration of business strategy, IT strategy, business infrastructure, and IT infrastructure (e.g. Porra et al. 2005; Saaksjarvi 2000). Existing empirical alignment research has not been mapped to these dimensions; rendering it difficult to aggregate findings across studies.
- *What is the effect of alignment on firm performance?* The assessment of firm performance has not been consistent across studies. Could there be different

dimensions of alignment related to different measures of firm performance? If alignment is a key to firms getting the most out of their IT investments (Burn and Szeto 2000; Byrd et al. 2006), it is important we understand nuances of firm performance.

- *Do other factors confound the relationship between alignment and firm performance?* Empirical work has been conducted regarding how different factors facilitate alignment (Brown and Magill 1994; Chan and Reich 2007; Chan et al. 2006; Preston and Karahanna 2009). However, no research has systematically examined the larger nomological network surrounding alignment and firm performance or examined contingencies that shape the strength of those relationships (Preston and Karahanna 2009; Reich and Benbasat 2000).
- *Do methodological issues obscure our understanding of the relationship between alignment and firm performance?* Alignment researchers have expressed concerns that methodological issues such as single respondents and use of questionnaires could confound results (Kearns and Sabherwal 2006; Tallon 2007b) or result in suboptimal measures of alignment (Cragg et al. 2002). Through meta-analysis, we evaluate whether these issues result in systematic challenges in the alignment literature.

To address these questions, we evaluate the alignment literature in two steps. In the first step, we conduct a *narrative review* of the alignment literature. Specifically, we discuss the theories used in the IS literature to define and understand alignment. We classify the dependent variables, antecedents, correlates, and moderators related to

alignment that we identified in the literature. Additionally, we propose a model and present hypotheses that evaluate these relationships. In the second step, we conduct a *meta-analytic review* of the literature. We describe how we collected our data and our coding procedures, evaluate the magnitude of the relationships between alignment and other constructs in our model, and use moderator analysis to probe whether variation across studies is the result of methodological issues. We conclude the paper with a discussion of the findings of our narrative review and meta-analysis and present their implications for research and practice.

## **NARRATIVE REVIEW**

We identified 184 papers on alignment in the Information Systems literature<sup>1</sup>. We begin our narrative review of these papers by deriving the dimensions of alignment and defining the measures of firm performance. Then, we discuss theoretical perspectives that inform the nomological network surrounding alignment and firm performance. Next, we develop a research model of alignment and discuss methodological issues that may moderate our proposed relationships.

### **Alignment and Its Dimensions**

At its inception, alignment was considered strictly at an externally focused, strategic level. In particular, researchers proposed alignment was the link between strategic IT planning and strategic business planning (e.g. Baets 1992; Henderson and Sifonis 1988; King 1978). Additional research expanded this perspective to include the alignment of IT and business strategic orientations (e.g. Chan et al. 1997; Chen 2010). Hence, research on "strategic alignment" explicitly examined the linkage of business and

---

<sup>1</sup> We provide a detailed description of how we conducted our literature review in the meta-analysis section of the paper.

IT strategies or plans. To differentiate it from the other dimensions of strategic alignment presented later in the alignment literature, Reich and Benbasat (1996) coined the term "intellectual alignment" (Chan and Reich 2007; Reich and Benbasat 1996; 2000). This dimension is defined as "the degree to which the mission, objectives, and plans contained in the business strategy are shared and supported by the IS strategy" (Chan et al. 2006 pp. 27).

In the early 1990s, researchers moved away from the strategic or intellectual realm to an internally-focused, operational understanding of alignment. Lee and Leifer (1992) made an early attempt to this end by considering the alignment between the business and IT infrastructures. Other studies examined organizational and IT infrastructures' alignment (e.g. Cragg et al. 2007; Kang et al. 2008; Thrasher et al. 2006). In addition, researchers studied the coordination of activities or processes between the business and IT (e.g. Barua et al. 2004; Brown 1999; Heim and Peng 2010). From this point of view, alignment is dependent on management's ability to integrate the infrastructures and processes of the business and IT rather than aligning its strategies. Most commonly, this dimension is referred to as "operational alignment" and is defined as "the link between organizational infrastructure and processes and I/S infrastructure and processes" (Henderson and Venkatraman 1993; 1999 pp. 476). It is also referred to as structural (Chan and Reich 2007), technical (Lee et al. 2008), or functional alignment (Henderson and Venkatraman 1993; 1999).

While intellectual and operational alignment examine linkages at the same level (i.e. strategy to strategy or infrastructure to infrastructure), a third group of alignment

definitions takes a more holistic view of alignment by transcending levels (i.e. strategy to infrastructure) (Sabherwal et al. 2001). For example, early research on this type of alignment examined the linkage of business strategies and IT processes (Karimi and Konsynski 1991; Main and Short 1989). Later, researchers considered the alignment of the IT strategy and business structure (Jordan and Tricker 1995). Scholars have also considered an alignment of the total organization (Ling et al. 2009), where there is a simultaneous fit between business strategy, IT strategy, business infrastructure, and IT infrastructure (e.g. Baets 1996; Henderson and Venkatraman 1993; Porra et al. 2005; Sabherwal et al. 2001). In particular, Henderson and Venkatraman (1993; 1999) presented four dominant cross-domain alignment perspectives. They described two cross-domain relationships where business strategy drives IT infrastructure, which are differentiated by IT strategy or business infrastructure constraints (e.g. firms with a strategy execution perspective use business strategy to drive IT infrastructure directly and also through IT strategy). They also describe two cross-domain relationships where IT strategy drives business infrastructure, which are constrained by business strategy and IT infrastructure (e.g. firms with a competitive potential perspective use IT strategy to drive business infrastructure directly and also through business strategy). Since this third group of alignment studies considers a dynamic interaction between the external (strategy) and internal (infrastructure) levels of the business and IT (Benbya and McKelvey 2006; Broadbent et al. 1999a; Henderson and Venkatraman 1993; 1999), it is referred to as "cross-domain alignment" (Lee et al. 2008). Cross-domain alignment is defined as "the degree of fit and integration among business strategy, IT strategy, business infrastructure,

and IT infrastructure" (Chan and Reich 2007 pp. 300; Henderson and Venkatraman 1993; 1999). Other common labels include integrated (Lee et al. 2008), organizational (Ling et al. 2009), or cross-dimensional alignment (Sabherwal et al. 2001).

Table 1 summarizes definitions of intellectual, operational, and cross-domain alignment. We found every alignment study could be classified according to these definitions (see Appendix A for specific definitions, the domain to which they refer, and the appropriate dimension being addressed; see Appendix B for a full categorization of all the studies).

<b>Table 1: Definitions of Strategic Alignment</b>	
<b>Dimension</b>	<b>Definition</b>
Intellectual	"the degree to which the mission, objectives, and plans contained in the business strategy are shared and supported by the IS strategy" (Chan et al. 2006 pp. 27)
Operational	"the link between organizational infrastructure and processes and I/S infrastructure and processes" (Henderson and Venkatraman 1993; 1999 pp. 476)
Cross-Domain	"the degree of fit and integration among business strategy, IT strategy, business infrastructure, and IT infrastructure" (Chan and Reich 2007 pp. 300)

### **Defining Firm Performance**

Performance is the most commonly studied dependent variable in the alignment literature (Chan and Reich 2007). We found 124 of the 184 articles studied the relationship between alignment and firm performance. Since firms pursue different strategies, they emphasize distinct output variables including financial performance, productivity, and customer benefit (Hitt and Brynjolfsson 1996; Porter 1980). For example, firms pursuing a Defender business strategy are more cost-driven, emphasizing operational excellence and economies of scale (i.e. productivity) (Chan et al. 2006). Since firms may emphasize one dimension of performance over another (Chan et al. 2006; Porter 1980), we suggest that the examination of different dimensions of firm



performance could have contributed to the alignment paradox. For instance, a number of studies show that firms focusing on the productivity dimension found little or no benefit from alignment (Chan et al. 2006; Sabherwal and Chan 2001; Tallon 2007b). See Table 2 for definitions of the three distinct dimensions of firm performance as outcome variables.

<b>Table 2: Definitions of Firm Performance</b>			
<b>Construct</b>	<b>Definition</b>	<b>Example Studies</b>	<b>% of Studies</b>
Financial Performance	the firm's ability to "gain competitive advantage and therefore higher profits or stock values" (Hitt and Brynjolfsson 1996 pp. 123)	(Armstrong and Sambamurthy 1999; Barua et al. 2004; Byrd et al. 2006; Cragg et al. 2002; Croteau and Raymond 2004; Tallon 2007b)	51% (79 of 124)
Productivity	the measure of the contribution of various inputs to total outputs (e.g. gross marginal product, gross margin per employee) (Hitt and Brynjolfsson 1996; Raymond and Bergeron 2008)	(Burn and Szeto 2000; Heim and Peng 2010; Hung et al. 2010; Raymond and Bergeron 2008; Zviran 1990)	39% (60 of 124)
Customer Benefit	"the total benefit that a given purchase confers to consumers" (Hitt and Brynjolfsson 1996 pp. 124)	(Barua et al. 2004; Celuch et al. 2007; Cragg et al. 2002; Li et al. 2006a; Tallon 2007b)	10% (16 of 124)

First, financial performance refers to the firm's ability to "gain competitive advantage and therefore higher profits or stock values" (Hitt and Brynjolfsson 1996 pp. 123). This research examines the impact of alignment on competitive advantage (e.g. Fink and Neumann 2009; Kearns and Lederer 2003), profitability (e.g. Nash 2006; Powell 1992; Raymond and Bergeron 2008), and return on assets, equity, or investment (e.g. Nash 2006; Tallon 2007b).

Second, productivity refers to the measure of the contribution of various inputs to total outputs (e.g. gross marginal product, gross margin per employee) (Hitt and Brynjolfsson 1996; Raymond and Bergeron 2008). These studies observe the impact of

alignment on operational efficiency (e.g. Burn and Szeto 2000; Doherty et al. 1999; Tarafdar and Gordon 2007) and productivity (e.g. Heim and Peng 2010; Hung et al. 2010; Raymond and Bergeron 2008).

Finally, customer benefit is "the total benefit that a given purchase confers to consumers" (Hitt and Brynjolfsson 1996 pp. 124). This term is used in the ERP implementation literature and includes meeting customer needs more proactively and efficiently to improve customer service and, therefore, customer satisfaction (Chand et al. 2005; Velcu 2007). In the same way, alignment researchers look at relationships with customers (Tallon 2007b; Tallon et al. 2000) in regard to determining how to best meet customer needs and create a higher level of customer satisfaction (Heim and Peng 2010; Li et al. 2006a). Table 3 shows the most common relationships investigated are between intellectual alignment and financial performance (k=45) and intellectual alignment and productivity (k=25). The least-studied construct is customer benefit (k=4 with intellectual alignment, k=5 with operational alignment, and k=7 with cross-domain alignment).

<b>Table 3: Number of Studies (k) per Relationship</b>				
		Dimension of Firm Performance		
		Financial Performance	Productivity	Customer Benefit
Dimension of Alignment	Intellectual	45	25	4
	Operational	12	14	5
	Cross-Domain	23	22	7

### **Theoretical Perspectives**

Two dominant theoretical perspectives inform the nomological network surrounding alignment and firm performance. First, the Contingency Perspective (Lawrence and Lorsch 1967) is used to describe how the strategy formation process, the structural design of the firm, and the environment shape the alignment process. Second,

the Resource Based View of the Firm (RBV) (Barney 1991) suggests unique combinations of IT and business resources and knowledge facilitate alignment, which is a capability that drives firm performance.

### **The Contingency Perspective**

The Contingency Perspective posits that firms have specific strategic, structural, and environmental dynamics that differentiate them from each other within the same industry (Harrigan 1983; Hofer 1975; Lawrence and Lorsch 1967). As such, alignment researchers have used the Contingency Perspective to analyze the factors that create unique levels of alignment among firms (Bergeron et al. 2004; Chan and Reich 2007; Croteau and Raymond 2004). Since the interaction of these factors manifests itself uniquely in every firm, there is not a universally superior strategy or way to organize the firm's infrastructure so as to achieve the necessary alignment (Venkatraman 1989). Therefore, the Contingency Perspective suggests the level of alignment a firm achieves is dependent upon the context. The "context" includes environmental turbulence (Burn and Szeto 2000; Huang 2009), the firm's strategy (Lee et al. 2008), and the firm's structure (Bergeron et al. 2001; 2004). These are described in detail in the following paragraphs.

First, environmental turbulence has been used conceptualized as the nature of the industry and firms' adaptability within it. Environmental turbulence includes such concepts as environmental uncertainty, information intensity, and transformative industry behaviors. In general, these studies posit environmental turbulence impacts the firm's ability to align (e.g. Bergeron et al. 2001; Chang et al. 2008; Huang 2009). However, some researchers have found environmental turbulence does not always influence alignment (e.g. Kearns and Lederer 2004; Teo and King 1997). This inconsistency is

manifest, for example, where some researchers found environmental uncertainty not related to alignment for business firms (e.g. Chan et al. 2006; Teo and King 1997) while others revealed environmental uncertainty did result in different levels of alignment (e.g. Choe 2003; Kearns and Lederer 2004). In general, the mixed findings suggest environmental turbulence affects alignment in some situations but not in others.

Second, firm strategy is a frequently considered contingency variable in alignment research. Miles and Snow's (1978) Defenders, Prospectors, and Analyzers is often used as the strategic framework. Each strategy captures the firm's emphasis on product stability and operational efficiency (i.e. Defenders), innovation and flexibility (i.e. Prospectors), or product stability mixed with innovation (i.e. Analyzers). A number of studies utilizing this typology have found Analyzers and Prospectors recognize the importance of aligning business and IT strategies while Defenders do not (Chan and Reich 2007; Croteau and Bergeron 2001). This suggests alignment may be higher for some firms (e.g. Analyzers and Prospectors) but not others (e.g. Defenders) (also see Chan et al. 2006; Palmer and Markus 2000; Raymond and Croteau 2006).

Third, the firm's governance structure is another frequently studied contingency variable. Governance structure includes concepts such as the structural compatibility and the structure of authority in the organization (Johnston and Yetton 1996; Kang et al. 2008). Research indicates governance structure impacts the level of alignment (e.g. Bergeron et al. 2001; 2004; Lee et al. 2008; Oh and Pinsonneault 2007; Yayla 2008). For instance, centralization has been found to be necessary for alignment success (Kang et al. 2008); yet other research indicates successful alignment is possible with centralized,

decentralized, or even hybrid structures (Brown and Magill 1998). While it is unclear what type of structure has a positive impact on alignment, the existing research does indicate the level of alignment depends on the structure of the firm being studied.

In summary, the Contingency Perspective suggests environmental, strategic, and structural factors are critical to understanding alignment (Bergeron et al. 2004; Lee et al. 2008; Oh and Pinsonneault 2007). The amount of turbulence in the environment may reduce or enhance the firm's ability to align. Different strategic choices on the part of the firm may determine whether the firm pursues alignment. Finally, the firm's centralization/decentralization choice may also influence the level of alignment the firm can achieve. See Appendix C for a complete list of contingency studies that examine environmental turbulence, strategy, and governance structure as potential correlates of alignment.

### **Resource-Based View of the Firm**

The Resource-Based View of the Firm (RBV) analyzes a firm based on its tangible or intangible assets that are tied semi-permanently to the firm (i.e. resources) (Wernerfelt 1984). Specifically, RBV posits a firm achieves sustained competitive advantage when it possesses valuable and rare resources and protects these resources against imitation, transfer, and substitution (Barney 1991; Conner 1991; Mata et al. 1995). Given that strategy is uncertain, firms often have to make tough choices to successfully allocate their resources (Wernerfelt and Karnani 1987). For example, some firms may choose to focus their resources on one particular option while other firms may choose more flexibility by diversifying their resources (Wernerfelt and Karnani 1987).

One resource firms often seek to obtain is a superior alignment process (Kearns and Lederer 2003). In particular, alignment researchers have used RBV to uncover constructs that explain firms' alignment capabilities (e.g. Armstrong and Sambamurthy 1999; Bassellier and Benbasat 2004; Kearns and Lederer 2004), such as social alignment, IT investments, and governance structures (Armstrong and Sambamurthy 1999; Celuch et al. 2007). In this section, we will focus on describing these resources.

First, through social alignment, firms have the ability to develop and share knowledge, understanding, and commitment between business and IT such that the two can be integrated or aligned with each other (Armstrong and Sambamurthy 1999; Bassellier and Benbasat 2004; Broadbent et al. 1999b). In particular, firms who participate in knowledge sharing between business and IT uncover one of the most valuable assets of an organization such that IT-based opportunities arise and the firm produces superior alignment strategies (Celuch et al. 2007; Kearns and Lederer 2003; Taipala 2008). Therefore, firms who establish social alignment create a valuable, rare, and imperfectly mobile resource that can be used to achieve strategic alignment (Roepke et al. 2000; Stoel 2006).

Second, IT investments are also resources that help firms build valuable, rare, and inimitable alignment capabilities (Celuch et al. 2007; Chen et al. 2010a; Lee et al. 2008). By themselves, technology investments are equally available to all firms and cannot provide a competitive advantage (Carr 2003; Kearns and Lederer 2003; Oh and Pinsonneault 2007). Instead, firms can use their IT investments to create, maintain, and

improve IT capabilities necessary to establish alignment (Peppard and Ward 2004; Tallon 2000).

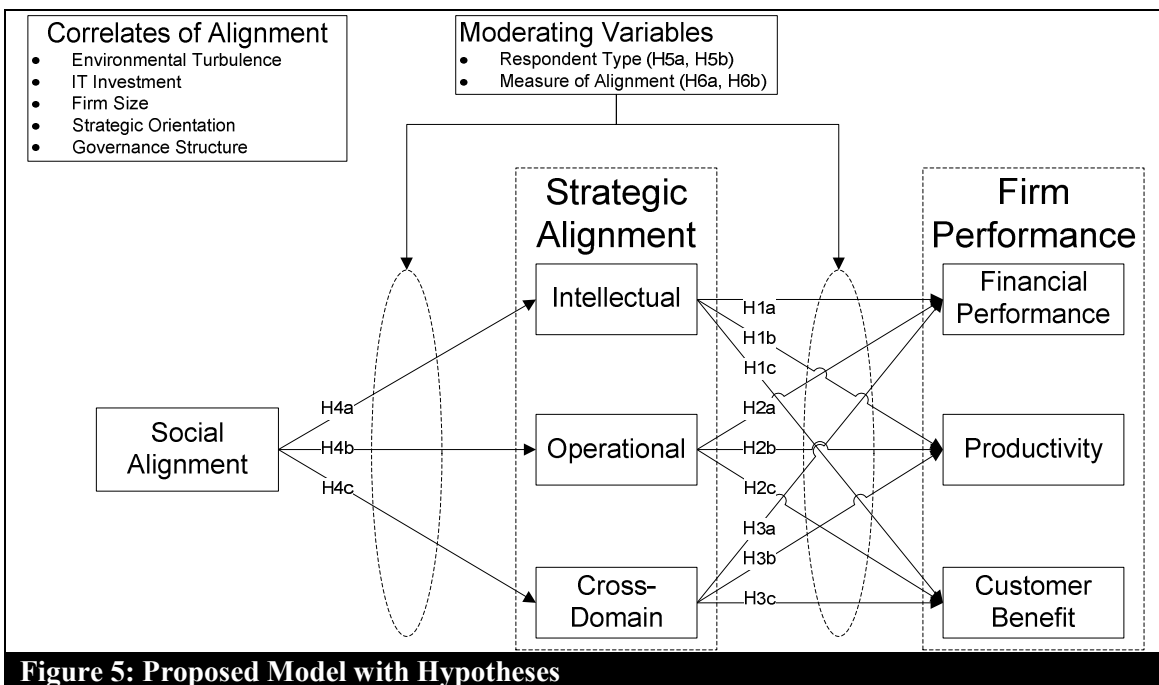
Finally, the firm's governance structure is a resource or capability the firm can use to exploit its opportunities and create alignment (Armstrong and Sambamurthy 1999). In particular, the firm's governance structure is a strategic option that can be used to exploit opportunities and act as a foundation for enabling alignment (Armstrong and Sambamurthy 1999).

Table 4 highlights takeaways from the studies using the Contingency Perspective and RBV. Appendix D presents RBV studies that addressed social alignment, IT investments, and governance structures as possible antecedents/correlates of alignment.

<b>Table 4: Takeaways from Alignment Perspectives</b>		
<b>Perspective</b>	<b>Takeaway</b>	<b>Reference(s)</b>
Contingency	The firm's level of alignment is contingent upon how the firm responds to and manages the <b>environment</b> .	(Chen et al. 2010a; Huang 2009)
	Alignment is dependent upon and is stimulated by <b>strategy</b> .	(Croteau and Raymond 2004; Sabherwal and Chan 2001)
	The level of alignment is dependent upon the firm's <b>governance</b> structure.	(Brown and Magill 1994; Chan and Huff 1992; Kang et al. 2008)
RBV	The ability to develop a shared understanding or knowledge between the business and IT ( <b>social alignment</b> ) may facilitate strategic alignment.	(Armstrong and Sambamurthy 1999; Celuch et al. 2007; Kearns and Lederer 2003; Stoel 2006; Taipala 2008)
	<b>IT investments</b> can be used to build valuable, rare, and inimitable alignment capabilities.	(Celuch et al. 2007; Chen et al. 2010a; Lee et al. 2008; Tallon 2000)
	The firm's business and IT <b>governance</b> structures are strategic capabilities that may influence the firm's ability to achieve alignment.	(Armstrong and Sambamurthy 1999)

## A Model of Alignment: Antecedents and Outcomes

To evaluate alignment's ties to firm performance, it is necessary to situate the construct within a nomological network (see Figure 5). Based on our review of 184 papers examining alignment in the extant literature, we identified the most commonly used outcomes, antecedents, and correlates of alignment to describe the nomological net. We use this review to develop a summative model of alignment that we will examine using meta-analysis.



**Figure 5: Proposed Model with Hypotheses**

### Intellectual Alignment with Firm Performance

Intellectual alignment is one resource a firm can develop that addresses how business strategy can be used to support and be supported by the IT strategy (Kearns and Lederer 2003; Stoel 2006). Without intellectual alignment, IT strategies might fail to reflect the strategic direction of the firm, resulting in lower returns on their IT investment, marketplace confusion, and erosion of the firm's competitive advantage (Kearns 2005). Research indicates firms with higher intellectual alignment achieved higher long-term



profitability, availability of financial resources, and sales growth than firms with lower IT alignment (Cragg et al. 2002; Croteau and Raymond 2004).

In pursuit of intellectual alignment, decision makers focus on the broader concerns of competitive strategy and strategic IT planning; instead of emphasizing the detailed operational decisions, they assume department-level alignment will result from a well-conceived strategy (Das et al. 1994; Huang and Hu 2007). Specifically, firms take a strategy-level (or top-down) perspective of the organization as they consider the competitive environment and enterprise-wide (versus department-level) capabilities; this perspective allows the firm to leverage its technologies strategically and to differentiate itself from the competition (Das et al. 1994; Kearns and Lederer 2004; Peppard and Ward 2004). Thus, firms focused on aligning their IT and business strategies will be better positioned to create a competitive advantage (Kearns 2006; Kearns and Lederer 2000) and achieve superior financial performance (Avison et al. 2004; Byrd et al. 2006; Das et al. 1994; Floyd and Wooldridge 1990). Since previous research supports this type of focused strategy may lead to higher profitability (e.g. Wernerfelt 1984; Wernerfelt and Karnani 1987), we propose:

*H1a: Intellectual alignment will be positively associated with financial performance.*

Since resources are often limited, firms that choose to focus on aligning their strategies may be limiting their ability to achieve other types of alignment (i.e. there is a trade-off between focus and flexibility) (Wernerfelt and Karnani 1987). This may mean these firms lack the flexibility to adjust to uncertainty (Wernerfelt and Karnani 1987). For example, uncertainty can arise within the internal operations of the firm if an executive

leaves or an accident on the production line occurs (Wernerfelt and Karnani 1987). In this situation, the firm may accumulate unexpected costs to obtain the experience it needs to keep up with the competition; as such, productivity or customer loyalty may suffer (Wernerfelt 1984). On the one hand, this suggests the relationship between intellectual alignment and productivity/ customer loyalty may not be as strong as the relationship between intellectual alignment and profitability because the firm is choosing a focus strategy over a flexibility strategy (Wernerfelt and Karnani 1987).

On the other hand, some research suggests aligning IT and the business strategies is also relevant to other aspects of firm performance (e.g. Luftman and McLean 2004; Schwarz et al. 2010). For example, studies have found a positive relationship between intellectual alignment and productivity (Lee et al. 2004; Nash 2006; Schwarz et al. 2010; Stoel 2006). In particular, Schwarz et al. (2010) included productivity as an indicator of organizational performance along with profitability. Intellectual alignment also increases customer benefits. For example, researchers have found a positive relationship between intellectual alignment and customer satisfaction (e.g. Kunnathur and Shi 2001; Li et al. 2006a). Likewise, scholars have determined intellectual alignment improves loyalty and customer relationships (e.g. Cragg et al. 2002; Tallon et al. 2000). Tallon et al. (2000), for example, proposed the alignment of IT with the business strategy contributes to higher levels of IT business value and conceptualized IT business value as financial performance (i.e. enhancing products and services), productivity (i.e. improving sales and marketing), and customer benefit (i.e. developing positive customer relations). Even though a few studies have found a negative correlation between intellectual alignment and performance

(e.g. Bergeron et al. 2001; Byrd et al. 2006; Cragg et al. 2002; Nash 2006; Taipala 2008) and RBV suggests the relationships won't be as strong as we predicted in H1a, the above logic and evidence indicates the results of the meta-analysis should show:

*Intellectual alignment will be positively associated with*

*H1b: productivity.*

*H1c: customer benefit.*

### **Operational Alignment with Firm Performance**

Operational alignment is an internally-focused dimension referring to the link between IT and business infrastructures and processes. This form of alignment is focused on allocating resources for operational purposes to maximize resource productivity (Chen et al. 2010a; Tallon et al. 2000). In particular, firms that link their IT and business processes are thought to improve visibility and information flow (McAfee 2002). This reduces errors and delays, improves organizational decision making, and enhances the firm's ability to interact with its supply partners (Hitt et al. 2002). In other words, the firm focuses on its intra-organizational interactions by building a technology infrastructure that supports the business infrastructure and key internal processes (Kang et al. 2008; Tallon et al. 2000). By addressing these operational issues, the firm can reduce its operating costs, improve the quality of its products and services, and support long-term enterprise productivity (Benbya and McKelvey 2006; Tallon et al. 2000). Conversely, firms that don't achieve operational alignment make ineffective decisions, are less likely to see improved information flows, and do not benefit from more efficient business operations (Bharadwaj et al. 2007). Since previous research supports this type of focused strategy may lead to higher profitability (Wernerfelt 1984; Wernerfelt and Karnani 1987)

and this specific type of alignment is focused on productivity (Chen et al. 2010a; Tallon et al. 2000), we propose:

*Operational alignment will be positively associated with*  
*H2a: financial performance.*  
*H2b: productivity.*

Akin to the arguments presented for firms focusing on aligning strategies, firms that align their infrastructures and processes may struggle with similar limitations in that they may lack the flexibility to adjust to uncertainty in the competitive environment (Wernerfelt and Karnani 1987). Despite the trade-off these firms may be choosing between focus and flexibility, research shows aligning business and IT processes impacts not only the productivity and profitability of the firm but it can also improve the customer satisfaction (Lee et al. 2008). Other benefits described in the literature include improved customer retention and customer loyalty in addition to a higher return on investment, revenue growth, sales growth, and market share gains as a result of improved strategic flexibility (Celuch et al. 2007; Hooper 2006). Even though one study found a negative relationship between operational alignment and performance (Heim and Peng 2010), the above logic and evidence suggests alignment is a resource that can be used to generate increased customer benefit, even if that relationship isn't as strong as it is for operational alignment and financial performance/productivity. Hence, we expect the meta-analysis to find:

*H2c: Operational alignment will be positively associated with customer benefit.*

### **Cross-Domain Alignment with Firm Performance**

Many firms could have similar business and IT strategies (e.g. a low cost strategy); however, previous researchers have suggested execution of these strategies through the combination of business and/or IT infrastructures and processes determines superior firm performance (e.g. Henderson and Venkatraman 1993; 1999; Porter 1985). The RBV literature suggests firms can achieve superior performance only if firms' possess valuable, rare, immobile, nonsubstitutable, and causally ambiguous resources (Mata et al. 1995), of which alignment is a "quintessential form" (Tallon 2007b, pp. 230). This suggests IT and business activities at the strategic and process-level must be integrated with each other (i.e. cross-domain alignment) and with complementary resources (e.g. unique skills, knowledge-based assets, organizational capabilities) to give the firm the highest level of flexibility to deal with uncertainty (Wernerfelt and Karnani 1987) and to deliver desired performance results (Sabherwal et al. 2001; Tallon 2007b).

These superior results are determined by the strategic goals of the firm (Tallon 2007b). For example, some firms focus on operational excellence (i.e. productivity), while other firms consider customer intimacy (i.e. customer benefit) or product leadership (i.e. competitive advantage or financial performance), as the most important goal (Tallon 2007b). However, it is possible for firms to focus on more than one goal; Tallon et al. (2000) suggests firms can have a "dual focus" where IT can be used to meet the strategic positioning and operational efficiency goals of an organization. This is particularly important in turbulent environments where firms cannot rely on top-down planning to achieve higher firm performance (Floyd and Wooldridge 1990; Grant 2003). In other words, firms need to balance bottom-up prescriptive tools (e.g. Luftman's SAM),

technical knowledge, and experimentation with top-down, strategy-driven methodologies (e.g. the balanced scorecard) to achieve the best all-around alignment (Hu and Huang 2006).

Specifically, a firm can flexibly adapt its strategic focus to the changing competitive environment at the same time it builds a solid technology infrastructure when it pursues the "right type of fit for the particular mix of processes underlying [its] strategy" (Tallon 2007b, pp. 227; Wernerfelt and Karnani 1987). By addressing both the strategic and operational issues simultaneously, the firm can differentiate itself from the competition, cut costs, enhance operating efficiency, and develop more intimate customer relationships simultaneously (Tallon 2007b; Wernerfelt and Karnani 1987). Even though a few studies have found a negative correlation between cross-domain alignment and performance (e.g. Armstrong and Sambamurthy 1999; Ling et al. 2009; Raymond and Bergeron 2008; Tallon 2007b), the above logic and evidence indicates the results of the meta-analysis should show:

*Cross-domain alignment will be positively and equally associated with*

*H3a: financial performance.*

*H3b: productivity.*

*H3c: customer benefit.*

### **Social Alignment**

While research on alignment concentrates on linking IT and business strategies and/or infrastructures, social alignment research focuses on the people involved in creating the alignment (Reich and Benbasat 2000). Research on this construct emphasizes shared knowledge and understanding among the IT and business representatives responsible for strategic IT management (Preston and Karahanna 2009). Therefore, social

alignment refers to "the state in which business and IT executives within an organizational unit understand and are committed to the business and IT mission, objectives, and plans" (Reich and Benbasat 2000 pp. 82).

Extant research indicates social alignment is an antecedent to intellectual alignment (Preston and Karahanna 2009) such that social alignment (i.e. the shared awareness, shared knowledge, and participation between the IT and business managers) is positively associated with strategic alignment (e.g. Chan et al. 2006; Sabherwal and Kirs 1994) (see Appendix E for a review of the studies testing the relationship between social and strategic alignment). A number of studies specifically address social alignment in the context of firm size where senior management commitment to, support of, and participation in IT decisions and planning significantly influences or enables strategic alignment in a variety of firms (Chan et al. 1997; Hussin et al. 2002; Kearns and Lederer 2003; Luftman et al. 1999; Raghunathan 1992).

We can further delineate the relationship between social and strategic alignment by analyzing the dimensions of strategic alignment (see Table 5 for details). When a shared understanding of IT and business objectives exists among the upper managers of a firm, they are more likely to establish a well-conceived strategy since they can communicate more effectively with each other; in turn, better communication leads to more effective process-level decisions (Das et al. 1994; Reich and Benbasat 2000). Since more information leads to a better understanding and better decisions (Daft and Lengel 1986), we predict social alignment contributes to intellectual alignment because a shared knowledge and understanding of the business and IT strategies is linked to the strategic

choices the executive team makes (Hambrick and Mason 1984; Preston and Karahanna 2009). We also predict social alignment contributes to operational alignment because leaders who understand their process-level systems (e.g. ERP) and formulate clear objectives for these systems are more likely to encourage and pursue internal alignment (Kang et al. 2008; Zhu et al. 2009). Finally, we predict social alignment contributes to cross-domain alignment because business and IT leaders who exchange information and knowledge about their internal processes and external strategies are more likely to understand them and, consequently, how to achieve them (Hung et al. 2010; Luftman et al. 2008). . . Hence:

*Social alignment will be positively associated with*  
*H4a: intellectual alignment.*  
*H4b: operational alignment.*  
*H4c: cross-domain alignment.*

<b>Table 5: Research on the Relationship between Strategic and Social Alignment</b>		
<b>Dimension of Alignment</b>	<b># of Studies</b>	<b>Example Studies</b>
Intellectual	25	(Chan et al. 2006; Kearns and Lederer 2004; Preston and Karahanna 2009; Teo and King 1997)
Operational	5	(Lee et al. 2008; Zhu et al. 2009)
Cross-Domain	4	(Armstrong and Sambamurthy 1999; Luftman et al. 2008)

### **Correlates of Alignment**

As indicated in the discussion of Theoretical Perspectives, 5 additional factors influence alignment: environmental turbulence, IT investment, firm size, strategic orientation, and governance structure. Since the relationship between these variables and alignment is undetermined, we include these as correlates. Table 6 summarizes our review of these constructs. Table 7 provides a summary of these constructs, their definitions, and the supporting perspective.



**Environmental Turbulence:** Research has shown frequent changes in the environment and an unstable operating context complicate the alignment process (Chan and Reich 2007; Grant 2003) such that environmental turbulence renders it difficult for managers to specify, plan, and implement an optimal alignment pattern (Boddy and Paton 2005; Grant 2003). To the contrary, some researchers have found environmental turbulence can positively influence alignment because uncertainty increases the need for information and effective information systems, thereby creating a greater reliance on IT (Chan et al. 2006). Still other researchers have demonstrated environmental turbulence does not always influence alignment (e.g. Kearns and Lederer 2004; Teo and King 1997). Since there are mixed findings about the relationship between environmental turbulence and alignment, this variable will be meta-analyzed as a correlate of alignment.

**IT Investment:** Researchers have posited a direct relationship between investment and firm performance where alignment was a critical moderator of that relationship (e.g. Byrd et al. 2006). However, research has shown technology investments are equally available to all firms such that a direct relationship between investments and performance is not plausible (Carr 2003; Kearns and Lederer 2003; Oh and Pinsonneault 2007). Therefore, researchers have posited IT investments are an antecedent to alignment, which then leads to an increase in firm performance (e.g. Lee et al. 2004). Since alignment is potentially a way a firm realizes a return on IT investments (Avison et al. 2004; Huang and Hu 2007), we include it as a correlate in our model.

**Firm Size:** Many studies have indicated firm size influences the alignment process. For example, empirical evidence shows large firms require more comprehensive and formal

strategy-making processes and planning than smaller firms (Cragg et al. 2002; Powell 1992; Pyburn 1983). Furthermore, large firms tend to have more "slack" resources available to respond to changes in the environment, invest in new IT projects, and integrate technology into their business processes (Armstrong and Sambamurthy 1999; Chan et al. 2006). However, research suggests even small firms will pursue and achieve alignment (Cragg et al. 2002). For example, Hussin et al. (2002) report the findings for large firms – regarding IT maturity, technical IT sophistication, and CEO commitment – also apply to small firms. Since it is unclear whether firm size will impact alignment, firm size is included as a correlate of alignment.

**Strategic Orientation:** A firm's strategic orientation is determined by the course of action it charts and the resources it allocates based on the management teams' goals (Bergeron et al. 2001; Chandler 1962; Tallon 2007b). Research suggests alignment is contingent upon the firm's strategic orientation, where certain firms (e.g. Defenders or "local SMEs") do not perceive the pursuit of alignment as beneficial as others (e.g. Prospectors or "world-class SMEs") (Raymond and Croteau 2006; Sabherwal and Chan 2001). Hence, we include strategic orientation as a correlate of alignment.

**Governance Structure:** The Contingency Perspective and RBV indicate the level of alignment depends on the firm's governance structure, which "is characterized by its level of decentralization, formalization, and complexity" (Bergeron et al. 2001 pp. 130; Kishore and McLean 2007; Rivard et al. 2006). This addresses the debate over who is in charge of managing the IT resources - the central organization or the functional/user departments (Jordan and Tricker 1995). On the one hand, research indicates excessive

decentralization leads to lack of interest in alignment processes and redundant processes (Brown 1999; Mehta and Hirschheim 2007). Accordingly, centralization of IT decisions facilitates the interaction between IT and business managers so that alignment is positively affected (Kearns and Sabherwal 2006). On the other hand, empirical evidence shows alignment between IT and the business can be successful even with a decentralized governance structure since the firm is more agile and can respond more quickly to changes in the environment (Fink and Neumann 2009; Grant 2003; Mohdzain and Ward 2007; Tiwana and Konsynski 2010). Thus, governance structure is a correlate of alignment for alignment.

In summary, the literature reveals there are six commonly used exogenous factors that influence alignment, based on the contingency and RBV perspectives. Researchers have largely demonstrated social alignment has a positive relationship with the dimensions of strategic alignment (24 of 26 studies found a positive relationship, as illustrated in Appendix E), so we included this factor as an antecedent of strategic alignment. However, alignment studies present conflicting results regarding the significance, direction, and association with alignment for the other five factors. For example, the affect of environmental turbulence on alignment was dependent on the industry or the source of turbulence. Some researchers posited IT investment was a direct antecedent to alignment, while others treated it as a moderator. Small firms seemed to demonstrate a lower propensity to align than large firms, but some research indicates small firms can achieve alignment similar to large firms when they pursue it. A number of studies indicate firms with different strategic orientations may not pursue alignment.

Finally, decentralization does not always mean the firm will be less aligned. We speculate these conflicting influences on alignment could be the foundation of the "alignment paradox". Through meta-analysis, we can resolve these inconsistencies and inconclusive evidence about these relationships by identifying the potential sources of variation that could affect the direction and magnitude of each relationship (Joseph et al. 2007).

**Table 6: Findings for the Correlates of Alignment in the Alignment Literature**

<b>Correlate of Alignment</b>	<b>Positive Relationship</b>	<b>Contingent Relationship</b>	<b>Contradictory Evidence</b>
Environmental Turbulence	environmental turbulence is positively associated with alignment (Chan et al. 2006; Choe 2003; Gottschalk and Solli-Saether 2001; Kearns and Lederer 2004; Taipala 2008; Wang and Tai 2003)	the relationship between environmental turbulence and alignment depends on the type of environmental turbulence or alignment (it can be positive, negative, or insignificant) (Ling et al. 2009; Rivard et al. 2006)	environmental turbulence is not related to alignment (Teo and King 1997; Yayla 2008)
IT Investment	IT investment is an antecedent to alignment (Lee et al. 2004)	alignment is a positive moderator or mediator of the IT investment-firm performance relationship (Byrd et al. 2006; Celuch et al. 2007)	
Firm Size	large firms need more formal and comprehensive strategy-formulation and planning processes than small firms and have the resources to invest in IT (Armstrong and Sambamurthy 1999; Chan et al. 2006; Cragg et al. 2002; Powell 1992; Pyburn 1983; Tallon and Kraemer 2006)		small firms don't often pursue alignment, but they can obtain the same benefits as large firms when they do (Cragg et al. 2002; Hussin et al. 2002)
Strategic Orientation		firms with different strategic orientations do not all align and perform to the same level (Chan et al. 2006; Raymond and Croteau 2006; Sabherwal and Chan 2001)	
Governance Structure	decentralization can lead to redundant and/or misaligned processes whereas centralization inspires communication among the business and IT to improve alignment (Brown 1999; Kearns and Sabherwal 2006; Mehta and Hirschheim 2007)		decentralized environments provide agility so firms can establish more dynamic alignment (Fink and Neumann 2009; Grant 2003; Mohdzain and Ward 2007; Tiwana and Konsynski 2010)

<b>Table 7: Definitions for Constructs in Alignment's Nomological Net</b>		
<b>Construct</b>	<b>Definition</b>	<b>Perspective Supporting the Construct</b>
Social Alignment	"the state in which business and IT executives within an organizational unit understand and are committed to the business and IT mission, objectives, and plans" (Reich and Benbasat 2000, pp. 82)	RBV
Environmental Turbulence	the degree of uncertainty, instability, unpredictability, and complexity that exists in the external environment (Teo and King 1997)	Contingency Perspective
IT Investment	the amount of money a firm spends on technology	RBV
Firm Size	the number of employees and/or the revenue of the focal firm	n/a - control variable
Strategic Orientation	"the determination of the basic long-term goals of an enterprise, and the adoption of courses of action and allocation of resources necessary for carrying out these goals" (Chandler 1962 pp. 13)	Contingency Perspective
Governance Structure	a firm that is "characterized by its level of decentralization, formalization, and complexity" (Bergeron et al. 2001 pp. 130)	Contingency Perspective, RBV

### **Methodological Moderators**

Methodological artifacts may explain variation across the studies because they can potentially explain why the relationship between alignment and firm performance is not always consistent (Hunter and Schmidt 2004). Specifically, two commonly referenced methodological issues may contribute to conflicting results and, therefore, confusion in interpreting the alignment literature: respondent type and measure of alignment (Cragg et al. 2002; Kearns and Sabherwal 2006; Tallon 2007b). These are defined in Table 8.

<b>Table 8: Essay 1 Moderator Definitions</b>	
<b>Moderator</b>	<b>Definition</b>
Respondent Type	
Single Respondent	one individual responds on behalf of the organization
Matched Pairs	two individuals respond to the same questions or survey items
Measure of Alignment	

**Table 8: Essay 1 Moderator Definitions**

Moderator	Definition
Questionnaire	survey items are directed at collecting perceptions about alignment
Fit Model	survey items and/or interview questions are designed to collect information on the IT and business strategy of the firm so alignment can be determined through moderation, mediation, matching, covariation, profile deviation, or gestalt approaches

First, we include respondent type as a moderator because the debate over single respondent versus matched CIO/CEO pairs is a regularly cited limitation in the alignment literature. On the one hand, research indicates surveying matched pairs is superior to surveying single respondents because the researcher can capture both sides of the dyad (Croteau and Raymond 2004; Kearns and Sabherwal 2006). Also, studies often cite their use of single respondents was problematic due to common source bias (e.g. Armstrong and Sambamurthy 1999; Jarvenpaa and Ives 1993; Kearns and Sabherwal 2006; Lai et al. 2009). Although this concern can be addressed by using multiple respondents in the same firm (Teo and King 1996), collecting data from two sources at the executive level is quite difficult (Chan et al. 1997) and could compromise the anonymity of the questionnaire (Kearns and Sabherwal 2006). Additionally, subjectivity and measurement error are still a possibility even for matched pairs (Tallon 2007b). Since the effect of additional bias from the use of single respondents is a potential problem, we predict<sup>2</sup>:

*Using single respondent versus matched pair respondent types will be associated with larger estimates for the correlation between*

*H5a: intellectual alignment and financial performance.*

*H5b: social and intellectual alignment.*

---

<sup>2</sup> Of the relationships in the nomological net, only the relationships between intellectual alignment and financial performance and between intellectual and social alignment contained a sufficient number of studies (i.e.  $k \geq 10$ ) for a moderator analysis (Switzer et al. 1992). Hence, we only present hypotheses for these two relationships.

The second methodological issue is the choice of measurement instrument for capturing alignment. This is a critical concern since different approaches can yield different meanings of the theory and generate inconsistent results (Bergeron et al. 2001; Powell 1992). Although mathematical calculations, typologies and taxonomies, and qualitative assessments approaches appear in the alignment literature, questionnaires and fit models are the predominant instruments used to measure alignment (a total of 63 and 46 empirical studies used one of these two measures of alignment, respectively). For studies using questionnaires, researchers often use Likert scale questions so respondents can rate their perceptions of alignment in their organization. For fit model studies, the IT and business strategies are measured independently and then a composite index is created by aggregating these components (Oh and Pinsonneault 2007) using at least one of the six types of fit: moderation, mediation, matching, gestalts, profile deviation, or covariation (as discussed by Venkatraman (1989) and tested by Bergeron et al. (2001)). Fit measures of alignment may be more objective because alignment itself is not determined by the perceptions of the respondents. Nevertheless, fit models have been criticized for resulting in contradictory, mixed, or inconsistent results based on the perspective of fit chosen by the researcher (Bergeron et al. 2004) and for over-simplifying the complex and reciprocal relationships among the variables in question (Oh and Pinsonneault 2007). Since questionnaires are based more heavily on perceptual measures than objective calculations and may not be not as rigorous as determining alignment from formal computation of the IT and business strategies (i.e. in fit models) (Cragg et al. 2002), we believe the results



may be upwardly biased for questionnaires when the results are compared to fit models (Podsakoff et al. 2003); hence<sup>3</sup>:

*Using questionnaires versus fit models to measure alignment will be associated with larger estimates for the correlation between*  
*H6a: intellectual alignment and financial performance.*  
*H6b: social and intellectual alignment.*

In summary, researchers have acknowledged limitations in using single respondent versus matched pairs and between questionnaires directly measuring alignment and fit models (see Table 8). By including these variables as moderators in our meta-analysis, we will be able to analyze these variables and determine whether they explain some of the variation across studies (i.e. help address these conflicting results) (Hunter and Schmidt 2004).

## **META-ANALYSIS**

We used meta-analysis to mathematically cumulate the results of previous studies on alignment (Hunter and Schmidt 1990; 2004) and test our hypotheses. We briefly outline the advantages of meta-analysis for addressing our research questions on alignment. First, meta-analysis is more replicable than a narrative review because it allows a mathematical combination of correlations between two variables. In this case, we use  $r$ , where the dimensions of alignment are correlated with a variety of variables such as the dimensions of firm performance (i.e. financial performance, productivity, and customer benefit), social alignment, environmental turbulence, etc. In other words, we can cumulate the correlations for alignment across studies by codifying them all in the

---

<sup>3</sup> Of the relationships in the nomological net, only the relationships between intellectual alignment and financial performance and between intellectual and social alignment contained a sufficient number of studies (i.e.  $k \geq 10$ ) for a moderator analysis (Switzer et al. 1992). Hence, we only present hypotheses for these two relationships.

same model then examining the differences in the relationships among the variables (Hunter and Schmidt 2004).

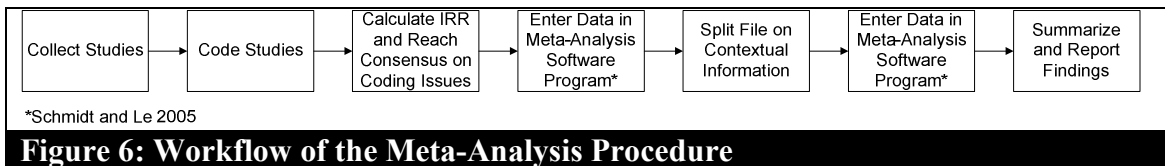
Second, meta-analysis enables the mathematical correction of certain types of research design flaws and methodological factors that may have obscured the alignment and firm performance relationship. Specifically, meta-analysis enables examining sampling error, facilitates correcting measurement reliability, and "enables the quantitative examination of the impact of moderator variables on the results" (Hunter and Schmidt 2004; Stewart and Roth 2001 pp. 147). Thus, we use meta-analysis as a means for cumulating alignment research to draw conclusions from, and resolve inconsistencies in, this literature.

## **Method**

### **Sources of Data**

Following Webster and Watson (2002) and the techniques of Hunter and Schmidt (2004), we began our literature review using a keyword search in various electronic databases (e.g. Science Direct, Web of Science, Academic Search Premier, Business Source Premier) to identify published studies on IT-business alignment through March 2010 (see Figure 6 for a workflow diagram of the entire meta-analysis procedure). Conference proceedings, dissertations, and theses were included in the search to avoid bias towards higher effect sizes typically associated with published journal articles (Rosenthal 1979); therefore, we also included the AIS Electronic Library (to collect AIS conference proceedings) and ProQuest Dissertations & Theses databases in our search. To capture articles on alignment, we systematically searched these databases for alignment and other related terms (Avison et al. 2004) including alignment, strategic

alignment (Chan et al. 2006; Kearns and Sabherwal 2006), linkage or linking (Tavakolian 1989), fit (Bergeron et al. 2001), integration (Teo and King 1997; Weill and Broadbent 1998), coordination (Lederer and Mendelow 1989), coalignment (Wang and Tai 2003), bridge (Avison et al. 2004), harmony (Luftman et al. 1999; Tallon 2007b), and fusion (Smaczny 2001).



**Figure 6: Workflow of the Meta-Analysis Procedure**

We conducted a manual search of leading IS and business journals that were outlets for alignment research. We took particular care in looking through these journals beyond simple keyword searches and inspected every article. Journals and the number of alignment articles we identified are reported in Table 9.

<b>Table 9: Journals Included in the Detailed Search</b>	
<b>Journal Name</b>	<b># Articles Contributed</b>
Information & Management	22
Journal of Strategic Information Systems	22
MIS Quarterly	21
Journal of MIS	16
Journal of Information Technology	12
Communications of the Association for Information Systems	10
Information Systems Management	10
IEEE Transactions on Engineering Management	8
Information Systems Research	8
European Journal of Information Systems	6
Decision Sciences	5
Journal of AIS	3

We took four additional steps to ensure we captured all the relevant articles. First, we used our library's Interlibrary Loan (ILL) system to collect articles from other universities. This ensured we captured all relevant articles, not just those accessible from

our library's electronic databases. Second, we used citations in the articles to identify additional alignment articles. We then pulled these articles to see if they met our criteria for inclusion in the review. Third, we used Harzing's Publish or Perish and the Web of Science Cited Reference Search to identify articles that referenced papers we already identified. Finally, we e-mailed all the authors in our list of papers to see if they had additional correlation tables that have not been published (see Appendix F for a sample e-mail). We received responses from 92 authors (54.76%). Of these, two authors provided papers that were added to the review. This search resulted in a total of 184 papers examining IT-business alignment. These studies are listed in Appendix B. Of these articles, we developed a rigorous set of inclusion criteria to evaluate their usefulness for our meta-analysis.

### **Inclusion Criteria**

There were four inclusion criteria used to assess articles. First, the study had to use at least one dimension of strategic alignment. In other words, studies that only looked at social alignment were excluded from the meta-analysis. Eight studies did not meet this inclusion criterion (see "1. Strategic alignment criterion" in Table 10 and the studies marked with an "E1" in Appendix B).

Second, the study's unit of analysis had to be at the firm level. Studies at the business unit, individual, project, relationship, or system unit of analysis were excluded. Twelve studies did not meet this inclusion criterion (see "2. Unit of analysis criterion" in Table 10 and the studies marked with an "E2" in Appendix B).

Third, the study had to be empirical. We dropped 25 of the 184 papers in the narrative review because they were reviews of alignment, presented propositions without

testing them empirically, or were conceptual in nature. For empirical articles, we looked for zero-order correlations in the article. If these correlations were not presented in the article, we first looked for other analyses suggesting correlation tables might be available (e.g. regression, path analysis). If these analyses were presented in the article, we e-mailed the authors to obtain the required correlations (see Appendix G for an example e-mail we sent to 17 authors). If the study did not present this information or the author could not provide the correlations, it was excluded from further examination. A total of 99 articles were excluded based on this criterion (see "3. Reporting of results criterion" in Table 10 and the studies marked with an "E3" in Appendix B).

Finally, the article had to use an independent dataset. This means any earlier articles containing the same dataset were eliminated to avoid biasing the study through multiple-counting (Bobko and Roth 2003; Wood 2008) (see "4. Same dataset criterion" in Table 10 and the study marked "E4" in Appendix B). However, one journal article could contribute more than one set of correlation coefficients if independent datasets were used. For example, Chan et al. (2006) contributed 2 data sets, Sabherwal and Chan (2001) contributed 3 data sets, and Taipala (2008) and Dorociak (2007) contributed 5 and 6 data sets, respectively.

<b>Table 10: Number and Percentage of Excluded Studies by Inclusion Criteria</b>		
<b>Inclusion Criteria</b>	<b>k</b>	<b>%</b>
Total # of Studies Identified for Inclusion	184	
Studies Passing all Inclusion Criteria	64	34.8%
Studies Not Passing 1 or more Inclusion Criteria	120	65.2%
1. Strategic alignment criterion	8	6.7%
2. Unit of analysis criterion		
business unit	4	3.3%
Individual	1	0.8%
Project	3	2.5%

<b>Table 10: Number and Percentage of Excluded Studies by Inclusion Criteria</b>		
<b>Inclusion Criteria</b>	<b>k</b>	<b>%</b>
Relationship	1	0.8%
System	1	0.8%
Mixed	2	1.7%
3. Reporting of results criterion		
Review	1	0.8%
propositions only	1	0.8%
tools for assessing alignment	2	1.7%
conceptual	20	16.7%
could not extract necessary statistics	58	48.3%
necessary statistics not available from authors	17	14.2%
4. Same dataset criterion		
	1	0.8%
<i>Note:</i> Percentages for the studies not passing 1 or more inclusion criteria reflect the percent of excluded studies (k=120) due to each criterion.		

This resulted in a total of 64 papers, or 82 individual datasets, for the meta-analysis; this is indicated by the reporting of sample sizes in Appendix B where 8 papers included 2 or more studies. Of these papers, 45 were journal articles, 12 were dissertations, and 7 were conference papers. This is a large sample size compared to other firm-level meta-analyses in the top MIS journals (e.g. Lee and Xia's (2006) meta-analysis contained 21 empirical studies, Sharma and Yetton (2003) included 22 studies, and Kohli and Devaraj (2003) analyzed 66 studies) and other top management journals such as *Management Science* (e.g. VanderWerf and Mahon's (1997) meta-analysis included 22 studies).

### **Coding Procedure**

We collected citation information, a brief summary of the article, the alignment terms used, the definition of alignment used by the authors, and the dimension of alignment. For unpublished studies, we coded “conference” or “dissertation” under the journal name; for “year of publication”, we coded the year of the conference or the year the dissertation was approved by the individual’s committee.

The dimension of alignment was coded based on the definitions we presented in our narrative review for intellectual (Chan and Reich 2007; Reich and Benbasat 1996; 2000), operational (Cragg et al. 2007; Henderson and Venkatraman 1993; 1999), and cross-domain (Chan and Reich 2007) alignment.

We collected two contextual factors: respondent type and measure of alignment. For respondent type, we coded the article as a "single respondent" when a single individual responded on behalf of the entire organization or on behalf of their department. If two individuals responded to the same question and then comparisons were made between these two individuals, then the study was coded as a "matched pair." The measure of alignment was coded in two categories: fit model or questionnaire (Chan and Reich 2007). The study was coded as a fit model when business strategy and IT strategy were measured separately and then alignment was conceptualized as moderation, mediation, matching, gestalts, profile deviation, or covariation (as discussed by Venkatraman 1989). In many cases, the researcher utilized questionnaires to capture the business or IT strategies (e.g. Byrd et al. 2006; Chan et al. 2006; Sabherwal and Chan 2001); however, the study was classified as a fit model if the subjects did not directly address their perceptions of alignment. Conversely, if the researcher posed a Likert scale question to directly capture the respondents' perceptions of alignment in their organization, the study was coded as a questionnaire.

We also coded the variable names and relevant statistics (e.g. correlations, reliabilities, and sample sizes). For reliabilities, we coded either internal consistency

reliabilities (ICR) or Cronbach's alpha. For the variables, we coded them as they were used in the correlation tables.

See Table 11 for a coding example of one paper included in the meta-analysis.

### **Meta-Analytic Approach**

We used the Hunter-Schmidt approach to meta-analysis (Hunter and Schmidt 2004). This technique uses coding and statistical-psychometric procedures to combine the results from independent, empirical studies that address similar research questions (for a discussion of this technique see Glass 1981; Hunter and Schmidt 2004; Lipsey and Wilson 2001).

After all the papers were collected and coded by the lead author, we had three independent raters code 10 different, randomly selected papers (i.e. a total of 30 papers were coded by two individuals) to ensure our heuristics were appropriate and coding was accurate. The inter-rater agreements were 97.7%, 96.38%, and 95.1%. Some of these disagreements involved the measure of alignment. The lead author coded Byrd et al. (2006), Ling et al. (2009), Powell (1992), and Chan et al. (2006) as studies using fit models to measure alignment whereas one individual coded them as questionnaire studies. Since these studies did, in fact, use questionnaires, the distinction was difficult to extract using the initial coding heuristics (i.e. it was not clearly specified what to do when alignment was separately measured for IT and business strategies for fit models). Therefore, coding heuristics were updated to include this nuance in a consistent manner.

Next, studies assessing the relationship between alignment and performance were combined into an overall analysis using the Schmidt-Le program (2005). Our estimates corrected for measurement error to prevent downwardly biased population correlation



estimates (i.e. estimates that are too small) (Hunter and Schmidt 2004). To do so, we corrected the correlations for unreliability by using an artifact distribution from our database of internal consistency measures of reliability (Hunter and Schmidt 2004). By doing so, our results reflected a conservative correction of the correlations (Hunter and Schmidt 2004). The credibility intervals were then placed around the corrected correlation. We computed the percent of variance in correlations across studies attributable to sampling and measurement error. Then, we combined these factors to illustrate how much of the variability in corrected population correlation estimates was due to these errors.

For the moderator analysis, we first partitioned the data into individual groups based on the categories presented in the "Contextual Information" section of Table 11. Just like the full analysis, we used the Schmidt-Le program (2005) to combine the data, correct for unreliability, correct for measurement and sampling errors, calculate the credibility intervals and variance, and determine the source of the variability. The next section summarizes our findings.

<b>Table 11: Coded Information for Essay 1</b>			
<b>Category</b>	<b>Items</b>	<b>Description of Items</b>	<b>Example (Barua et al. 2004)</b>
Article Information	Author Names	list of all the authors on the paper	Barua, A.; Konana, P.; Whinston, A.B.; Yin, F.
	Journal Name	name of the journal; "conference" or "dissertation" if unpublished	MIS Quarterly
	Year of Publication	year the study was published or printed	2004
	Article Title	title of the article	An Empirical Investigation of Net-Enabled Business Value
	Summary	brief summary of the article	firm performance improves when a firm pursues internal and external digitization initiatives
	Alignment Terms Used	alignment, strategic alignment, linkage or linking, fit, integration, coordination, coalignment, bridge, harmony, or fusion	process alignment
	Definition of Alignment	the definition presented by the author(s) for the alignment construct	"the degree of fit between business processes and underlying technology assets to facilitate online transactions and sharing of, and access to, strategic and tactical information." pp. 593
	Dimension of Alignment		operational
	Intellectual	key words in the definition: linking of the business and IT mission, objectives, plans, goals, and strategies (Hackathorn and Karimi 1988; Lederer and Mendelow 1989; Reich and Benbasat 1996; Teo and King 1996)	
	Operational	key words in the definition: linking of the business and IT infrastructure, processes (Brown and Magill 1994), resources (Moody 2003), and capabilities (Miller 1993)	
Cross-domain	combination of strategy with infrastructure across the IT and business		
Contextual	Type of Subjects	single respondents (NOTE:	

<b>Table 11: Coded Information for Essay 1</b>			
<b>Category</b>	<b>Items</b>	<b>Description of Items</b>	<b>Example (Barua et al. 2004)</b>
Information	matched pairs	two individuals respond to the same questions or survey items	multiple individuals but not matched pairs)
	single respondents	one individual responds on behalf of the organization	
	Measure of Alignment		questionnaire
	fit model	survey items and/or interview questions are designed to collect information on the IT and business strategy of the firm so alignment can be determined through moderation, mediation, matching, covariation, profile deviation, or gestalt approaches	
	questionnaire	survey items are directed at collecting perceptions about alignment	
Required Statistics*	Sample Size	number of organizations in the study	1076
	Variable 1**	the reported variable in the correlation	supplier process alignment (PRCS)
	Variable 1 Reliability**	the reliability of the reported variable	0.9
	Variable 2**	the reported variable in the correlation	customer readiness (RDYC)
	Variable 2 Reliability**	the reliability of the reported variable	0.69
	Correlation**	observed correlation between Variable 1 and Variable 2 (reported as an r-statistic)	0.285
*This information was only coded for the meta-analysis studies because it was unavailable in the other studies. **These columns are repeated to capture the entire correlation matrix.			

## Results

### Detailed Explanation of the Columns in the Meta-Analysis Tables

In order to ease interpretation of results, we provide a detailed explanation for how to interpret each column in the meta-analysis tables. The first column (see Table 12) represents the 9 constructs analyzed in relation to alignment. The second column is the corrected population correlation estimate ( $\hat{\rho}^4$ ). The third column contains the number of coefficients included in the analysis (k). The fourth column contains the total number of firms observed for all the studies included in the analysis (i.e. the n for each study is combined to create the N for the meta-analysis). The fifth column reports the variance of the true score correlations across studies (Var.). A value of zero in this column would indicate there is no variance across the studies in our meta-analysis (that is, what is not attributed to sampling and measurement error). A non-zero variance indicates there is variance across population estimates. The credibility interval<sup>5</sup> columns (i.e. 80% CRI with 10% and 90% CV sub-columns) report the range of correlations at the population level (i.e. all firms) that are possible based on the studies included in the meta-analysis<sup>6</sup>. Substantial ranges that include positive and negative values (as indicated by the highlighted cells) tell us the distribution of population estimates include the value of zero (e.g. the relationship between intellectual alignment and firm size has a 10% CV of -0.11 and a 90% CV of 0.29).

---

<sup>4</sup>  $\hat{\rho}$  reflects the corrected population correlation estimate. It is not meant to reference significance values (i.e. p-values) here or throughout the paper.

<sup>5</sup> We chose to focus on credibility intervals as opposed to confidence intervals because using credibility intervals is more consistent with a random effects model in which moderators can be present to influence population parameters (see Hedges and Vevea 1998; Hunter and Schmidt 2004).

<sup>6</sup> These values always match the  $\hat{\rho}$ -value when the variance is equal to zero.

The final column, PVA, is the percent of variance in observed correlations attributable to all the artifacts. This percentage indicates how much of the variance was due to sampling or measurement error as opposed to underlying differences<sup>7</sup>. This is important because higher percentages indicate the research procedures themselves have caused the variance in the results as opposed to differences within the population. For example, the PVA for environmental turbulence is 35%. This means 35% of the variance between studies reporting on the relationship between intellectual alignment and environmental turbulence is due to sampling or measurement error in each of these studies and 65% is due to all other factors (e.g. range restriction of the firms in the sample, other moderating factors).

### **Meta-Analyzed Relationships**

We split the alignment construct into the three dimensions. Results indicate the intellectual alignment dimension strongly influenced the results (see Table 12). The results for intellectual alignment as one dimension of alignment were similar to the combined analysis; this is probably because the number of studies examining intellectual alignment influenced the distinct results for operational or cross-domain alignment. This suggests splitting alignment into three dimensions may help us better understand how alignment relates to performance.

Hypotheses 1a through 1c, that state intellectual alignment will be positively associated with financial performance, productivity, and customer benefit, were supported. As reported in Table 12, intellectual alignment had a higher corrected population correlation estimate with productivity (0.55) than it did for financial

---

<sup>7</sup> This value is always 100% when the variance is equal to zero.

performance (0.43) or customer benefit (0.28)<sup>8</sup>. While we expected the highest relationship to be between intellectual alignment and financial performance since the focused strategy is often associated with profitability, we did find all three relationships were positive as we expected. This tells us firms with higher levels of alignment between IT and business strategies are associated with increases in firm performance across all dimensions. In particular, these firms are most likely to demonstrate high levels of productivity<sup>9</sup>.

Hypotheses 2a through 2c, that state operational alignment will be associated with financial performance, productivity, and customer benefit, were supported. Table 12 shows operational alignment had positive corrected correlations with all three dimensions of firm performance<sup>8</sup>. The highest corrected population correlation point estimate with customer benefit (0.48), followed by productivity (0.35), and then financial performance (0.32). Similar to the H1 group of hypotheses, we expected the highest relationships between operational alignment and productivity/financial performance since these firms are focusing on aligning their infrastructures and processes rather than flexibly responding to the external competitive environment. This suggests firms that have aligned their IT and business infrastructures are more likely to be associated with higher levels of customer satisfaction than productivity or profitability.

---

<sup>8</sup> We interpret this with caution because those relationships with k-values below 10 can create more sense of uncertainty in interpreting our conclusions (Switzer et al., 1992). In particular, this means we can't be sure these few studies actually represent the population as a whole and we acknowledge the corrected population correlation estimate resulting from the meta-analysis may, in fact, be higher or lower than our results indicate.

<sup>9</sup> We interpret this with caution due to the overlapping credibility intervals.

Hypotheses 3a through 3c, that state firms aligning their IT/business strategies and IT/business infrastructures are more likely to be positively and equally associated with all three dimensions of firm performance since the firm simultaneously considers strategic and operational decisions and outcomes, were supported. The  $\hat{\rho}$ -value for the relationship between cross-domain alignment and firm performance as a single dimension is 0.45 with a variance equal to zero<sup>8</sup>. This indicates the relationship between cross-domain alignment and firm performance, as a whole, is positive and that all variance among the studies can be attributed to sampling and measurement error. Even when firm performance was split into sub-dimensions, the  $\hat{\rho}$ -values were similar and overlapped considerably ( $\hat{\rho}$ =0.29, 0.37, and 0.33 with ranges of 0.02-0.56, 0.10-0.63, and 0.15-0.51, respectively<sup>8</sup>).

Hypotheses 4a through 4c, that state social alignment will be positively associated with all three domains of strategic alignment, were supported. Table 12 shows cross-domain alignment (0.67) demonstrated the highest corrected population correlation estimates for social alignment (versus 0.63 and 0.53 for intellectual and operational alignment, respectively)<sup>8</sup>.

<b>Table 12: Meta-Analysis Results for Alignment</b>							
Analysis	$\hat{\rho}$	k	N	Var.	80% CRI		PVA
					10% CV	90% CV	
<b>Intellectual Alignment</b>							
Firm Perf.	0.4999 <sup>10</sup>	37	4553	0.0928	0.1098	0.8899	10%

<sup>10</sup> This is the corrected population correlation estimate for firm performance as a single dimension. For intellectual alignment, this reflects an inflated corrected population correlation estimate with a very high range between the highest and lowest  $\hat{\rho}$ -values. This suggests a moderator analysis is necessary (i.e. 3 dimensions of performance should be considered). For operational alignment, this also indicates an inflated corrected population correlation estimate with a high range. Therefore, a moderator analysis is also necessary in this case. For cross-domain alignment, the  $\hat{\rho}$ -value is still quite high, but there is no variability across studies. This suggests further moderation analyses are not required.

**Table 12: Meta-Analysis Results for Alignment**

Analysis	$\hat{\rho}$	k	N	Var.	80% CRI		PVA
					10% CV	90% CV	
Financial Perf.	0.4343	22	3356	0.0652	0.1086	0.7621	13%
Productivity	0.5477	12	1581	0.0749	0.1974	0.8981	22%
Cust. Benefit	0.2831	4	699	0.0268	0.0736	0.4926	21%
Social Alignment	0.6257	25	3495	0.0519	0.3342	0.9172	18%
Environ. Turb.	0.3272	10	1328	0.0340	0.0911	0.5633	35%
IT investment	0.3063	3	478	0.0305	0.0826	0.5300	19%
Firm Size	0.0900	4	618	0.0254	-0.1140	0.2939	23%
Strategy	0.5300	7	898	0.1000	0.1252	0.9347	6%
Gov. Structure	0.5314	9	967	0	0.5314	0.5314	100%
<b>Operational Alignment</b>							
Firm Perf.	0.5730 <sup>10</sup>	14	2850	0.0157	0.4128	0.7332	64%
Financial Perf.	0.3157	6	1774	0.0063	0.2141	0.4174	73%
Productivity	0.3492	6	634	0.0608	0.0336	0.6649	33%
Cust. Benefit	0.4846	4	1649	0.0141	0.3323	0.6368	16%
Social Alignment	0.5325	4	431	0.0093	0.4091	0.6559	76%
IT Investment	0.2016	2	398	0.0390	-0.0512	0.4545	24%
Firm Size	0.0748	4	636	0.1741	-0.4593	0.6089	11%
Strategy	0.5792	2	515	0.0491	0.2955	0.8629	11%
Gov. Structure	0.2971	2	351	0.2672	-0.3646	0.9588	7%
<b>Cross-Domain Alignment</b>							
Firm Perf.	0.4465 <sup>10</sup>	9	1240	0	0.4465	0.4465	100%
Financial Perf.	0.2911	7	884	0.0448	0.0203	0.5619	22%
Productivity	0.3688	4	483	0.043	0.1034	0.6342	19%
Cust. Benefit	0.3294	2	304	0.0196	0.1501	0.5088	21%
Social Alignment	0.6650	2	291	0.0425	0.4010	0.9289	5%
Gov. Structure	0.8207	5	416	0	0.8207	0.8207	100%
$\hat{\rho}$ = corrected population correlation estimate; k = number of studies; N = number of observations; Var. = variance of true score correlations; CRI = credibility interval; PVA = percent of variance in observed correlations attributable to all artifacts gray, highlighted cells = the range of population correlation estimates includes zero							

**Moderator Analysis: Intellectual Alignment**

Of the relationships analyzed in the previous steps, only the relationships between intellectual alignment and financial performance/social alignment contained a sufficient number of studies (i.e.  $k \geq 10$ ) for a moderator analysis (Switzer et al. 1992). As such, we interpret all other values with caution because relationships with k-values below 10 can create more sense of uncertainty in interpreting our conclusions (Switzer et al., 1992). In particular, this means we can't be sure the few studies included in the meta-analysis



actually represent the population as a whole; therefore, we acknowledge the corrected population correlation estimate resulting from the meta-analysis may, in fact, be higher or lower than our results indicate. The results of this analysis are presented in Table 13.

**Respondent Type (sample):** Hypothesis 5a, that suggests the respondent type used in the study will be associated with larger estimates for the correlation between intellectual alignment and financial performance, was weakly supported. The results presented in Table 13 indicate single respondent studies have a somewhat higher corrected population correlation estimates ( $\hat{\rho}$ ) than matched pair studies. The  $\hat{\rho}$ -value is 0.45 for single respondent studies and 0.40 for matched pair studies indicating the correlation between intellectual alignment and financial performance is only somewhat higher for studies using single respondents.

Hypothesis 5b posits the respondent type employed in the study will be associated with larger estimates for the correlation between social and intellectual alignment. The  $\hat{\rho}$ -value for the relationship between intellectual and social alignment is 0.65 for single respondent studies and 0.49 for matched pair studies. This suggests intellectual and social alignment are more strongly correlated for studies employing single respondents. Due to the large difference between these two correlations, we find support for Hypothesis 5b. However, the credibility intervals for these relationships overlap, so we interpret these differences with caution here and throughout the paper (Roth et al. 2003).

<b>Table 13: Moderator Meta-Analysis Results for Intellectual Alignment</b>								
Analysis		$\hat{\rho}$	k	N	Var.	80% CRI		PVA
						10% CV	90% CV	
Financial Performance								
sample	matched pairs	0.4026	8	1114	0.0903	0.0180	0.7872	9%

Table 13: Moderator Meta-Analysis Results for Intellectual Alignment								
Analysis	$\hat{\rho}$	k	N	Var.	80% CRI		PVA	
					10% CV	90% CV		
single respondent	0.4510	14	2242	0.0517	0.1600	0.7421	16%	
measure	fit model	0.2736	9	1476	0	0.2736	0.2736	100%
	questionnaire	0.5615	13	1880	0.0713	0.2196	0.9034	9%
Social Alignment								
sample	matched pairs	0.4887	7	813	0.0997	0.0845	0.8930	10%
	single respondent	0.6536	17	2633	0.0292	0.4349	0.8722	27%
measure	fit model	0.2688	4	498	0.0203	0.0864	0.4513	30%
	questionnaire	0.6802	21	2878	0.0408	0.4215	0.9389	20%
$\hat{\rho}$ = corrected population correlation estimate; k = number of studies; N = number of observations; Var. = variance of true score correlations; CRI = credibility interval; PVA = percent of variance in observed correlations attributable to all artifacts; dark gray = highest correlation; light gray = lowest correlation								

**Measure of Alignment (measure):** Hypothesis 6a, that states the measure of alignment employed by researchers will moderate the correlation between intellectual alignment and financial performance, was supported. Likewise, Hypothesis 6b, that states the measure of alignment used by researchers will moderate the correlation between social and intellectual alignment, was supported. Studies using fit models to measure alignment had the lowest corrected population correlation estimates whereas the questionnaire studies had the highest  $\hat{\rho}$ -values for all the moderator analyses as shown in Table 13. For the intellectual alignment to financial performance relationship, the corrected population correlation estimate was 0.27 for fit model studies and 0.56 for questionnaire studies. Similarly, the relationship between intellectual and social alignment was 0.27 for fit model studies and 0.68 for questionnaire studies. These findings suggest studies using questionnaires will be associated with larger estimates for the relationships between

intellectual alignment and financial performance/social alignment. These results are illustrated in Figure 7.

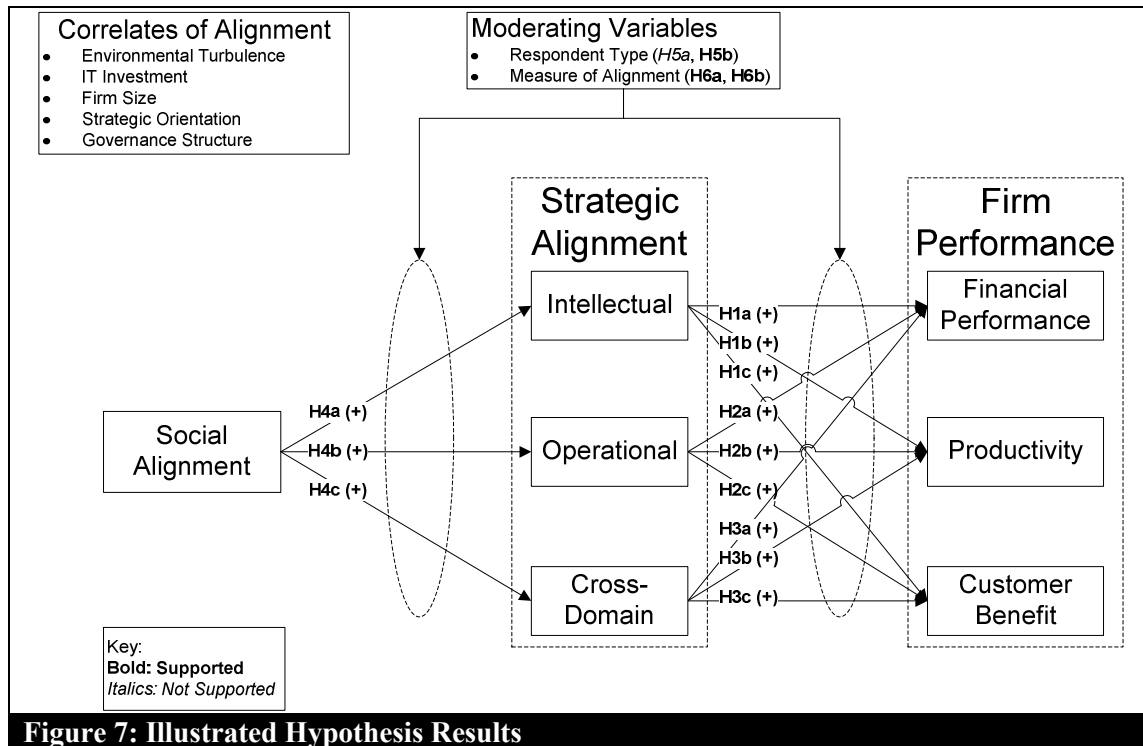
## **DISCUSSION**

### **Research Question 1: How should we represent or conceptualize alignment?**

Alignment is a general concept with multiple conceptualizations and definitions. In trying to identify a clear definition of the alignment construct, we found three dimensions collectively represented the subtle nuances of alignment in the extant literature. In particular, alignment can refer to the fit between the business and IT strategic domains (*intellectual alignment*), the fit between business and IT infrastructures & processes (*operational alignment*), or fit that transcends domains such that strategy is aligned with structure (*cross-domain alignment*). Since most researchers do not clearly specify the dimension under examination, it can be difficult to consistently interpret the results across studies. As a result, we offered crisp definitions of each dimension, mapped the existing literature according to the appropriate dimension, and then analyzed a research model tying alignment's dimensions to firm performance.

Through this mapping and analysis, we found intellectual, operational, and cross-domain dimensions of alignment are distinct. However, we also found only a handful of researchers considered two or more of these dimensions in a single study (e.g. Bergeron et al. 2001; Hung et al. 2010; Rivard et al. 2006; Tarafdar and Qrunfleh 2009).

Additionally, no study considered different combinations of alignment such that the four dominant cross-domain alignment perspectives presented by Henderson and Venkatraman (1993; 1999) could be analyzed.



Therefore, our analysis has three important implications for future research. First, in demonstrating there are three distinct dimensions of alignment, we provided evidence that it is necessary for future researchers to specify the type of alignment being studied. This will ensure consistent interpretation of previous and future results for the individual dimensions of alignment. Second, while we demonstrated these three dimensions are distinct, it is unclear whether these three dimensions are best represented as a higher order construct or whether the independent effects have high discriminant validity<sup>11</sup>.

<sup>11</sup> We meta-analyzed alignment as a single dimension to test it as a higher order construct. The table presented in Appendix H indicates alignment could potentially be a higher order construct since 100% of variance among the studies is accounted for by sampling and measurement error in two instances: firm performance and governance structure. However, most of the variables correlated with the higher-order alignment construct have very little variance accounted for by sampling and measurement error; this suggests there are other potential sources of variation among the studies (e.g. alignment as 3 independent dimensions). Hence, we were unable to conclude whether alignment might be a higher order construct.

Therefore, future researchers should study all three dimensions at the same time to compare their effects (both combined and independent).

Our third implication for future research is cross-domain alignment needs to be empirically examined since very few studies looked at the alignment of business strategy with IT infrastructure or IT strategy with business infrastructure. Additionally, researchers should study the four dominant cross-domain alignment perspectives presented by Henderson and Venkatraman (1993; 1999) as a means of determining how firms pursue cross-domain alignment. According to Henderson and Venkatraman (1993; 1999), firms have four options: strategy execution, technology transformation, competitive potential, or service level. In strategy execution and technology transformation, the business strategy drives the IT infrastructure. While strategy execution is constrained by the business infrastructure, technology transformation is constrained by the IT strategy. However, firms pursuing the competitive potential or service level alignment perspectives use IT strategy to drive business infrastructure such that business strategy and IT infrastructure are the constraining factors, respectively. This indicates strategy execution firms are more likely to pursue operational and business alignment (the alignment of business strategy to business infrastructure), technology transformation firms will pursue intellectual and IT alignment (the alignment of IT strategy to IT infrastructure), competitive potential firms will pursue intellectual and business alignment, and service level firms will pursue operational and IT alignment to enhance their cross-domain alignment success. This suggests researchers should focus on including all three dimensions of alignment, as well as business and IT alignment, in a

single empirical study to determine if firms pursue other forms of alignment at the same time they work toward cross-domain alignment.

### **Research Question 2: What is the effect of alignment on firm performance?**

After delineating the dimensions of alignment, we also found alignment researchers examined its connections to multiple indicators of firm performance. Notably, firm performance can refer to *financial* success of the firm, *productivity* improvements, or enhanced *customer benefits*. By examining each relationship individually, we found strong evidence these relationships are all positive once research design flaws and methodological factors (i.e. sampling and measurement error) are corrected. Since the corrected population correlation estimates and credibility intervals were all positive, our results show an alignment paradox does not exist at the firm-level when considering the alignment of strategies (intellectual), processes (operational), or strategies and processes (cross-domain).

Our findings of the inter-relationships between the dimensions of alignment and performance can be expressed with a matrix as shown in Table 14. In particular, our meta-analysis suggests higher levels of intellectual alignment may be related to higher productivity and financial performance than the other two dimensions of alignment. Our results also indicate higher levels of operational alignment are correlated with higher levels of customer benefit. Finally, the results show cross-domain alignment is associated with consistent performance results across all three measures of performance. In summary, our results indicate it may be more appropriate for firms with specific performance goals to focus on a particular dimension of alignment (i.e. firms interested in

increasing their productivity or financial performance should potentially focus on intellectual alignment, firms desiring to improve their customers' benefit may need to work toward improving their operational alignment, and firms who want to focus on their overall performance should likely pursue cross-domain alignment). However, the wide and overlapping ranges in the credibility intervals suggest the strength of these relationships is yet undetermined. Therefore, this has two implications for future research. First, researchers should examine why the relationship between specific dimensions of alignment may have a different impact on specific dimensions of performance. For example, does intellectual alignment have the greatest impact on productivity? Does operational alignment influence customer benefit more than financial performance or productivity? Second, further study needs to confirm the causal nature of these relationships. Since meta-analysis only examines the correlations, it is unclear whether firms that are performing well are simply more able to pursue alignment because they have more resources with which to invest in alignment capabilities (i.e. firms with higher financial performance can pursue alignment rather than higher alignment leads to higher financial performance).

### **Research Question 3: Do other factors confound the relationship between alignment and firm performance?**

We theorized social alignment would be positively associated with all three dimensions of alignment and found social alignment plays a role in the nomological network surrounding strategic alignment. Although scholars have emphasized the relationship between social and intellectual alignment (H4a:  $\hat{\rho}=0.63$ ), we found social alignment is also associated with cross-domain (H4c:  $\hat{\rho}=0.67$ ) and operational alignment

(H4b:  $\hat{\rho}=0.53$ ). Our meta-analysis shows the relationship between social and operational alignment is fairly established since most of the variance across studies (76%) is due to sampling and measurement error. However, the relationship between social and intellectual/cross-domain alignment needs to be explored further due to the wide range of the credibility intervals, suggesting there are other potential sources of variation among these studies. These sources will be discussed under Research Question 4.

Furthermore, alignment researchers often include five different correlates of alignment in their research models: environmental turbulence, IT investments, firm size, strategic orientation, and governance structure. Our results indicate these variables are positively associated with all three dimensions of alignment. However, the credibility intervals for a number of these correlates of alignment include negative values (e.g. firm size for intellectual alignment has a credibility interval of -0.11 to 0.29 and IT investment, firm size, and governance structure for operational alignment have credibility intervals of -0.05 to 0.45, -0.46 to 0.61, and -0.36 to 0.96, respectively). This suggests these relationships vary considerably across studies, where some relationships are positive and others are negative. These results are not surprising since our narrative review also revealed this disparity in findings. Hence, future research should focus on determining the direction of these relationships and under which conditions these relationships hold. Specifically, there are 2 relationships that need to be studied in future empirical studies. First, the relationship between operational alignment and IT investments needs to be explored. Researchers should first ask if IT investments help or hurt the alignment of firm processes (direction) and then ask if this relationship is



dependent on the types of resources the firm is investing in (e.g. process-level systems such as ERP vs. customer relationship management systems) (conditions). Second, the relationship between alignment (all 3 dimensions) and firm size needs to be empirically examined. For example, questions future researchers could ask include: are larger firms more or less likely to pursue and achieve strategic alignment (direction) and is this relationship dependent upon the executive team's willingness to work together to achieve alignment (conditions)?

While we proposed these six factors were antecedents/correlates of alignment, research has indicated these variables may directly relate to performance or serve as moderators of the alignment-performance relationship. A number of studies hypothesized and demonstrated that social alignment would directly influence a firm's financial performance and productivity (Kearns 2006; Kearns and Lederer 2004; Stoel 2006). Similarly, researchers have looked at the direct influence of IT investments on performance where alignment could act as either a mediator or moderator (Byrd et al. 2006; Celuch et al. 2007). Research also indicates environmental turbulence and strategic orientation may be moderators of the alignment-performance relationship (Chan et al. 2006; Ling et al. 2009; Tallon 2007b). Therefore, future research should examine these relationships to determine whether alignment is a mediator or moderator or whether the alignment-performance relationship is moderated by these factors.

**Table 14: Alignment to Performance Dimension Matrix**

	<b>Firm Performance</b>		
	<b>Financial Performance</b>	<b>Productivity</b>	<b>Customer Benefit</b>
<b>Intellectual Alignment</b>	<p>strategies are market-focused associated with:</p> <ul style="list-style-type: none"> <li>• higher revenues</li> <li>• gaining and sustaining competitive advantage</li> <li>• extending market reach, quicker</li> <li>• establishing external relationships</li> <li>• understand competitors</li> <li>• changing industry practices</li> </ul>	<p>strategies are operations-focused associated with:</p> <ul style="list-style-type: none"> <li>• improved firm-level productivity</li> <li>• increased operational efficiency</li> <li>• reduced costs</li> <li>• enhanced firm effectiveness</li> <li>• introduction of products to market</li> <li>• faster and at lower cost</li> </ul>	<p>strategies are market-focused (customer service) associated with:</p> <ul style="list-style-type: none"> <li>• establishing, sustaining, and improving customer relationships</li> </ul>
<b>Operational Alignment</b>	<p>infrastructures and processes are designed and implemented such that they are associated with:</p> <ul style="list-style-type: none"> <li>• responding more quickly to an uncertain environment</li> <li>• improving information flow</li> <li>• creating cost effective operations</li> <li>• improving coordination with supply chain partners and customers</li> <li>• exploiting internal resources</li> <li>• reducing costs and errors</li> <li>• meeting customer demand</li> <li>• increasing ROI and ROA</li> </ul>	<p>fundamentally change infrastructures and processes such that alignment is associated with:</p> <ul style="list-style-type: none"> <li>• increased flexibility and efficiency</li> <li>• improved core operations</li> <li>• enhanced information availability</li> <li>• creating more cost effective processes</li> </ul>	<p>infrastructures and processes are streamlined and may be associated with:</p> <ul style="list-style-type: none"> <li>• improving customer satisfaction</li> <li>• information sharing quality</li> <li>• disseminating information quickly and accurately</li> <li>• empowering customers</li> <li>• encouraging loyalty</li> </ul>
<b>Cross-Domain Alignment</b>	<ul style="list-style-type: none"> <li>• infrastructure and processes may be designed, implemented, and improved as a platform for successful strategic development</li> <li>• flexibility to potentially select a desired outcome by adjusting the management processes that support the strategy</li> </ul>		

#### **Research Question 4: Do methodological issues obscure our understanding of the relationship between alignment and firm performance?**

Our moderator analysis of the methodological choices researchers need to make indicates sampling differences did not markedly impact the relationship between intellectual alignment and financial performance. This implies single respondents may be a satisfactory sample when measuring the relationship between intellectual alignment and financial performance. This may be due to the fact that respondents know financial data is publicly available; hence, they may feel obligated to respond more accurately.

However, this was not the case for the relationship between intellectual and social alignment, which indicates individuals responding on behalf of the relationship perceived a stronger connection between shared understanding and aligned IT/business strategies than pairs of individuals did. We suspect single respondents exaggerated the degree of intellectual and social alignment in their self-report surveys potentially because a higher association between intellectual and social alignment is more socially desirable; this is one problem associated with common source bias (Podsakoff et al. 2003).

Our meta-analysis of the methodological issues in the alignment literature indicates researchers need to carefully choose their respondents. In particular, the difference between single respondents and matched pairs for the intellectual and social alignment relationship suggests researchers should use single respondents with caution. While scholars have acknowledged the use of single respondents was a limitation of their research (e.g. Armstrong and Sambamurthy 1999; Lai et al. 2009; Tallon et al. 2000), this is the first study to illustrate the magnitude of the impact of using single respondents,

particularly with social constructs, in the alignment literature. However, our results indicate single respondents are likely sufficient for studying the relationship between intellectual alignment and financial performance. In the future, researchers should pursue dyadic data when studying the relationship between intellectual and social alignment but not necessarily when examining the impact of intellectual alignment on financial performance.

We also found differences between studies using fit models as opposed to those using questionnaires. In the relationship between intellectual alignment and financial performance/social alignment, studies using questionnaires resulted in higher corrected population correlation estimates than in fit model studies. This indicates determining alignment by analyzing the business and IT strategies separately may be a more conservative estimate than directly questioning firms on their perceptions of alignment. Since measuring the perceptions of alignment yields such dramatically larger correlations than fit model studies, this suggests subjectivity and measurement error may be problems when using questionnaires to measure alignment due to method bias. Therefore, for future research, it is necessary to revisit how we measure dimensions of alignment.

These key findings and research implications are summarized in Table 15.

**Table 15: Key Findings and Research Implications for Essay 1**

Research Question	Findings	Past Research	Future Research
How should we represent or conceptualize alignment?	<ul style="list-style-type: none"> <li>• alignment is comprised of three dimensions: intellectual, operational, and cross-domain</li> <li>• the extant literature can be mapped to these dimensions</li> <li>• alignment's nomological network should be analyzed using these three dimensions</li> </ul>	unclear differentiation between the dimensions of alignment where all were frequently combined into a single construct (i.e. "alignment" or "strategic alignment")	<ul style="list-style-type: none"> <li>• specify the distinct type of alignment under evaluation</li> <li>• examine all three dimensions of alignment in a single study to determine their predictability</li> <li>• add business and IT alignment to empirically test the four dominant cross-domain alignment perspectives presented by Henderson and Venkatraman (1993; 1999)</li> </ul>
What is the effect of alignment on firm performance?	<ul style="list-style-type: none"> <li>• firm performance is comprised of three dimensions: financial performance, productivity, and customer benefit</li> <li>• the associations between the dimensions of alignment and the dimensions of firm performance may be unique even though they are overall positive (see Table 14)</li> </ul>	referred to the broad concepts of "alignment" and "firm performance" without clearly defining the specific question	<ul style="list-style-type: none"> <li>• clearly define the alignment and performance dimensions being studied</li> <li>• the alignment paradox does not exist, but the strength and causal direction of the relationships between the alignment-performance dimensions need to be examined</li> </ul>
Do other factors confound the relationship between alignment and firm performance?	<ul style="list-style-type: none"> <li>• social alignment has a positive, but unique, relationship with the three dimensions of strategic alignment</li> <li>• the correlates of alignment are, overall, positively associated with each dimension of alignment, but the relationship with alignment may be negative in some cases</li> </ul>	<ul style="list-style-type: none"> <li>• emphasized the relationship with intellectual alignment</li> <li>• mixed results</li> </ul>	<ul style="list-style-type: none"> <li>• determine the direction of the relationship and the conditions under which this direction will hold for IT investments/operational alignment and firm size/strategic alignment</li> <li>• examine these factors as mediators or moderators of the alignment-performance relationship</li> <li>• examine alignment as a mediator or moderator of the relationship between these factors and performance</li> </ul>

**Table 15: Key Findings and Research Implications for Essay 1**

Research Question	Findings	Past Research	Future Research
Do methodological issues obscure our understanding of the relationship between alignment and firm performance?	<ul style="list-style-type: none"> <li>• single vs. match pair responses may not influence the intellectual alignment - financial performance relationship but do affect the intellectual-social alignment relationship</li> <li>• directly measuring alignment through questionnaires (i.e. capturing the firm's perceptions of alignment) upwardly biases the results</li> </ul>	<ul style="list-style-type: none"> <li>• addressed this choice as a "limitation" of the research</li> <li>• create new survey items for each research context</li> </ul>	<ul style="list-style-type: none"> <li>• researchers may be able to use single respondents when measuring the relationship between intellectual alignment and firm performance but not when measuring social alignment</li> <li>• create a valid and reliable instrument for each dimension to ensure consistency across studies</li> </ul>

## **Limitations**

Like all studies, our work is not without limitations. First, our narrative review is restricted by human information processing capabilities and can result in highly subjective interpretations of the results (Hunter and Schmidt 2004; Lipsey and Wilson 2001; Stewart and Roth 2001). Therefore, we approached the alignment literature with a systematic data collection procedure. Specifically, we thoroughly searched the literature, established clear inclusion criteria, and created detailed heuristics describing the information to be collected from each study. This ensured our approach to studying the alignment literature that could be replicated by future researchers. Additionally, we complemented the narrative review with a meta-analysis. Through meta-analysis, we were able to address the potential deficiencies of our narrative review (e.g. limited human processing capabilities and subjective interpretation of results).

A second limitation to our study is there were relatively small number of studies that examined the operational ( $k=13$ ) and cross-domain ( $k=10$ ) dimensions of alignment. When we further analyzed their relationships with the three dimensions of firm performance, this resulted in  $k$ -values below 10, which can create some uncertainty in interpreting our conclusions (Switzer et al. 1992). However, our  $k$  is consistent with other firm-level meta-analyses that report similarly small  $k$ -values when splitting their data into sub-categories (e.g. Lee and Xia 2006; Stahl and Voigt 2008).

## **Implications for Practice**

Results of this study inform upper executives about the dimensions of alignment that are associated with superior firm performance. In all cases, higher alignment is correlated with higher levels of performance. This suggests intellectual, operational, or

cross-domain alignment are associated with higher levels of financial performance, productivity, or customer benefit. On the one hand, superior financial performance and productivity is most highly correlated with the alignment of IT and business strategies (i.e. intellectual alignment). On the other hand, cross-domain alignment seems to be most highly associated with financial performance, productivity, and customer benefits overall. Therefore, firms should consider which dimension of performance is most important and then align their IT and business strategies, infrastructures, or strategies and infrastructures accordingly.

For large firms seeking to establish alignment, they may find it is more difficult to establish intellectual and operational alignment. Therefore, these firms may need to dedicate more resources to these endeavors. Additionally, our results indicate large IT investments do not always guarantee a firm will be able to align its internal infrastructures and processes. Therefore, firms might need to pursue other means of ensuring internal alignment rather than focusing on the money they spend. Finally, decentralized infrastructures do not always promote internal alignment, so firms should consider centralizing their business and IT structures to facilitate the linkage of their internal processes.

Our review also highlights the association between social and strategic alignment. For top management teams with a strong understanding, knowledge, and commitment to IT and business strategies, our results indicate they may be able to achieve both intellectual and cross-domain alignment. Therefore, firms need to facilitate social alignment among their executives; in turn, they will likely have the flexibility to pursue



the type of alignment that best meets their performance goals. See Table 16 for a summary of these implications.

<b>Table 16: Implications for Practice from Essay 1</b>	
<b>Finding</b>	<b>Implication</b>
the associations between the dimensions of alignment and the dimensions of firm performance are unique	firms should consider which performance dimension is most important and then choose the appropriate alignment dimension to meet these goals, but any type of alignment is a worthy pursuit as alignment is correlated with positive results for all three performance dimensions
the correlates of alignment are, overall, positively associated with each dimension of alignment, but the relationship with alignment may be negative in some cases	<ul style="list-style-type: none"> <li>• firm size can have a negative impact on intellectual and operational alignment</li> <li>• IT investments and governance structure can have a negative impact on operational alignment</li> </ul>
social alignment has a positive, but unique, relationship with the three dimensions of strategic alignment	firms need to facilitate social alignment among their executives to improve their strategic alignment

## **CONCLUSION**

Research on alignment the last 30 years has revealed alignment doesn't always lead to higher firm performance. While some research has found a strong, positive relationship between alignment and firm performance, other research has indicated alignment and firm performance are not always related. Through our narrative review, we identify four potential sources of this paradox. First, researchers often fail to address the dimensional nature of alignment, using general terms instead of referencing explicit dimensions. Second, scholars have not identified the specific questions regarding the relationship between the individual dimensions of alignment and firm performance. Third, exogenous factors often exhibit contradictory associations with alignment. Finally, researchers do not always properly consider certain methodological issues such as sampling and measurement. This has created a discontinuity in our understanding of the

relationship between alignment and firm performance since interpreting results across these contradictory studies becomes difficult, if not impossible.

Through meta-analysis, we statistically summarized prior work and provide evidence that alignment and performance are each comprised of three unique dimensions, where these dimensions of alignment and performance are inter-related in unique ways. We also found positive relationships between the antecedents/correlates of alignment and the three dimensions of alignment. Regarding the moderator analyses, the sampling strategy did not necessarily affect the relationship between the alignment and firm performance dimensions but did impact the relationship between social and intellectual alignment. Additionally, we found the measurement instrument moderates the association between alignment and its antecedents and consequences, where fit models are associated with more conservative estimates.

While this study is largely descriptive, it does provide a number of implications for future research. First, researchers should not treat alignment or performance monolithically, but specify the *dimensions* of alignment and firm performance examined in the study. Failure to do this could obscure important relationships in the understanding of alignment. Second, business and IT alignment should be included in a study of cross-domain alignment to empirically test the four dominant *cross-domain perspectives* presented by Henderson and Venkatraman (1993; 1999). Third, the relationships between *IT investments/firm size* and alignment should be further explored to determine the direction of the relationships as well as the conditions under which those relationships hold. Fourth, the correlates of alignment should be studied as *mediators or moderators* of

the alignment-performance relationship and as direct influencers of performance where alignment is a potential moderator. Fifth, researchers should approach the use of *single respondents* with caution, particularly when examining social alignment. Finally, *specific measurement items* should be developed and validated for each dimension of alignment so researchers can devote more effort to examining antecedents to alignment.

## **ESSAY 2: Six Types of IT-Business Strategic Alignment: An Investigation of the Constructs and Their Measurement**

### **ESSAY 2 - ABSTRACT**

Top management has been concerned with IT-business strategic alignment (hereafter referred to as alignment) for the past thirty years. Consequently, alignment researchers have developed many models to understand how alignment generates value for firms. This paper reports on the development of instruments designed to measure six different types of alignment. These instruments are intended to be a tool for studying the alignment between IT and business strategies (i.e. intellectual alignment), between IT and business infrastructures and processes (i.e. operational alignment), and across these two domains such that strategies are linked with infrastructures and processes (i.e. 4 types of cross-domain alignment). This paper proposes definitions for each type of alignment and develops operational measures for each construct, each possessing desirable psychometric properties. Implications for theory and practice are discussed.

**Key Words:** alignment, IT-business strategic alignment, intellectual, operational, cross-domain

# **Six Types of IT-Business Strategic Alignment: An Investigation of the Constructs and Their Measurement**

## **INTRODUCTION**

IT-business strategic alignment (hereafter referred to as alignment) has been studied extensively over the last three decades. Primarily, the focus of this research has been on the importance of aligning the business and IT to generate value for the firm and achieve organizational success (Celuch et al. 2007; Chan and Reich 2007; Powell 1992). Since alignment has been viewed as a key to increasing firm performance, it continues to be one of the top-five issues concerning IT executives (Khaiata and Zualkernan 2009; Luftman and Ben-Zvi 2010; Luftman and Kempaiah 2008; Luftman et al. 2009). For example, there are a number of CIO discussion boards that discuss the topic, such as LinkedIn's "CIO Network" group. Recent topics include alignment as one of the challenges or threats to IT today (Mangini 2011) and how different types of alignment may be achieved and their benefits (Van Geel 2011; Wade 2011). Furthermore, Gartner continues to administer and publish surveys capturing the current status of alignment (e.g. McKendrick 2011).

Despite the years of research and discussion on the topic, the relationship between alignment and firm performance has been inconsistent. Some researchers have found alignment leads to increased profitability and a sustainable competitive advantage (Avison et al. 2004; Cumps et al. 2009; Papp 1999). Alternatively, other research has indicated some aligned firms experience no improvement, or even a decline, in performance (Palmer and Markus 2000; Tallon 2003). This inconsistency may be the

result of attempting to compare studies that are assessing different types of alignment and that are utilizing different measures of the alignment constructs (Avison et al. 2004; Chen et al. 2010a).

It may be difficult to distinguish between studies that are assessing different types of alignment because researchers have failed to agree on a consistent definition of alignment (Preston and Karahanna 2009). For example, some indicate "alignment" is the linking of IT and business strategies (e.g. Lee et al. 2004; Tan and Gallupe 2006). Others define the same term, "alignment", as the fit between IT and business infrastructures and processes (e.g. Brown 1999; Cragg et al. 2007). Still other researchers refer to "alignment" as the simultaneous integration of business strategy, IT strategy, business infrastructure, and IT infrastructure (e.g. Porra et al. 2005; Saaksjarvi 2000). Similarly, alignment is also inconsistently discussed by practitioners. For example, practitioners may discuss the alignment of "architecture practice" and "decision making information" (Van Geel 2011) or they might indicate "IT development" needs to be aligned with "corporate strategy and innovation" (Wade 2011). These unique conceptualizations of alignment indicate there may be different types of alignment, as originally suggested by Henderson and Venkatraman (1993; 1999).

Creating many different definitions for the same alignment construct is a problem for a few reasons. First, it is impossible to test the adequacy of the measurement of alignment without a clear and well-specified domain (MacKenzie et al. 2011; Nunnally and Bernstein 1994). Second, it leads to confusion about what is included, and not included, within the domain of alignment and among the different types of alignment

(MacKenzie et al. 2011). Finally, the indicators may be deficient or contaminated since alignment isn't adequately defined in a way that differentiates it from other constructs (MacKenzie et al. 2011).

Furthermore, empirical alignment research often fails to use established scales. Of the 184 articles analyzed in the first essay, 116 authors employed some type of questionnaire. Of these, 65 authors created new scales to measure alignment (e.g. Barua et al. 2004; Bassellier and Benbasat 2004; Kearns and Lederer 2004; Tallon et al. 2000). Only about one-quarter (i.e. 30 articles) used established scales like Venkatraman's (1985) STROBE (STRategic Orientation of Business Enterprises) and/or Chan et al.'s (1997) STROEPIS (STRategic Orientation of the Existing Portfolio of Information Systems) (e.g. Bergeron et al. 2004; Chan et al. 2006; Sabherwal and Chan 2001), Luftman's (2000) Strategic Alignment Maturity Model (e.g. Dorociak 2007; Khaiata and Zualkernan 2009; Luftman et al. 2008), or Segars and Grover's (1998) alignment items (e.g. Kearns and Sabherwal 2006; Newkirk and Lederer 2006b; Yayla and Hu 2009)<sup>12</sup>.

Inconsistently measuring alignment is a problem for a few reasons. By inadequately operationalizing alignment, researchers could derive invalid conclusions about the relationships with other constructs and the meaning of the theory itself could be altered (Bergeron et al. 2004; Drazin and Van de Ven 1985; MacKenzie et al. 2011; Oh and Pinsonneault 2007). Second, differing operationalizations of alignment create inconsistent results, which cause confusion and make it difficult for researchers to have

---

<sup>12</sup> Other less frequently used scales include Byrd and Turner (2000) (Chung et al. 2003; Fink and Neumann 2009), Kearns and Lederer (2000; 2003) (Stoel 2006; Tan and Gallupe 2006), Sabherwal and authors (2001; 1994) (Hung et al. 2010; Karimi et al. 2000) and Tallon and authors (2007a; 2000) (Fink and Neumann 2009; Ling et al. 2009; Rivard et al. 2006). In total, 21 authors used items referenced less than 3 times.

confidence in the direction of alignment research, to build upon the existing research, and to compare results across studies (Chin et al. 2003; Conboy 2009; Dennis et al. 2001; McKnight et al. 2002). Finally, it is difficult to present real-world applications to practitioners when the research findings are contradictory or don't represent contemporary business environments (Dennis et al. 2001).

Taken together, this suggests alignment researchers are assessing different types of alignment and measuring alignment inconsistently across the different types. As such, the literature may fail to converge on a shared understanding of alignment (Bergeron et al. 2001; Powell 1992). To build a cumulative research tradition, there first needs to be a framework for the different types of alignment such that it is clear what is, and is not, included within each type (Chan and Reich 2007; MacKenzie et al. 2011; Moore and Benbasat 1991). Second, the measures associated with each type of alignment need to be treated consistently to ensure rigorous investigations of alignment that build a cumulative research tradition (Bergeron et al. 2004; Oh and Pinsonneault 2007). Therefore, the objective of this study is to *build upon the existing alignment framework and statistically test operational measures of the different types of alignment.*

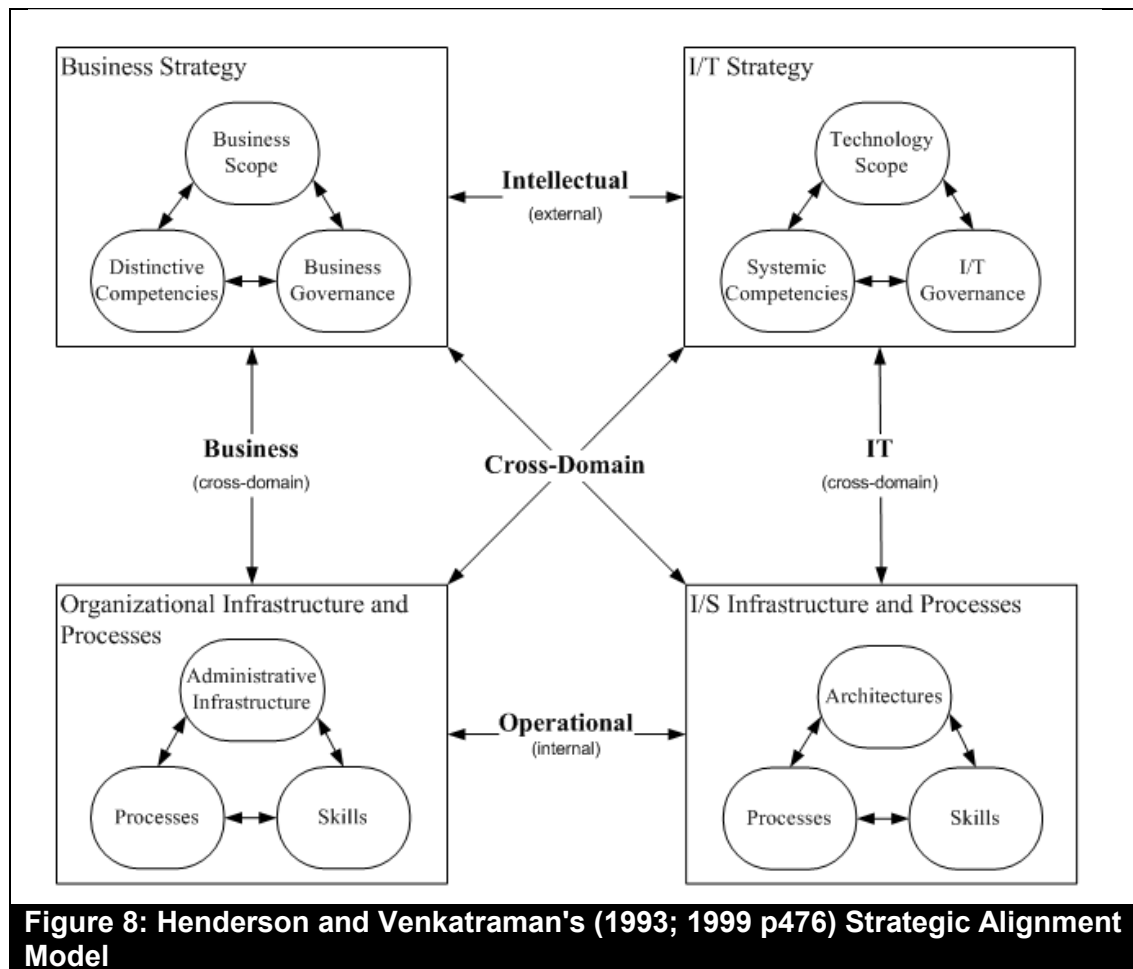
To achieve this objective, we first define alignment and discuss the Strategic Alignment Model (SAM) (Henderson and Venkatraman 1993; 1999) as a valid framework for assessing the different types of alignment. Next, we discuss existing measures and our instrument development process. Finally, we present our results, summarize our conclusions, and present implications for researchers and practitioners.



## **DEFINING ALIGNMENT**

"Alignment is the degree to which the needs, demands, goals, objectives, and/or structures of one component are consistent with the needs, demands, goals, objectives, and/or structures of another component" (Nadler and Tushman 1983 p119). One framework that addresses the alignment of business and IT components is SAM (Henderson and Venkatraman 1993; 1999). Specifically, SAM illustrates how firms must align the four fundamental domains of strategic choice – business strategy, IT strategy, business infrastructure and processes, and IT infrastructure and processes – to understand and realize the full potential of IT. Hence, *IT-business strategic alignment* refers to the appropriate and timely fit between two or more of these domains such that management of the business and IT remain in harmony (Chan and Reich 2007; Luftman and Brier 1999).

SAM, as illustrated in Figure 8, describes a firm's need to integrate the business and IT domains at three levels: strategies (i.e. external integration), infrastructures (i.e. internal integration), and strategies and infrastructures (i.e. cross-domain integration). External integration reflects the alignment of business and IT strategies (i.e. intellectual alignment). Internal integration is the alignment between the business and IT infrastructures and processes (i.e. operational alignment). Finally, cross-domain integration recognizes alignment can transcend the domains where strategies can be aligned with infrastructures and processes (i.e. cross-domain alignment, which also encompasses business and IT alignment). These different types of alignment are discussed in detail in the following paragraphs.



### Intellectual Alignment

One of the first researchers to consider the alignment of the business and IT components was King (1978). In his article, he focused on consistencies between the strategic, external levels of business and IT. He defined alignment as the link between "the organization's 'strategy set' to an MIS 'strategy set'" (p27). Researchers further refined King's definition of "strategy sets" by including "missions, objectives, and strategies" (Pyburn 1983 p3), plans/planning (Henderson and Sifonis 1988; Kearns and Lederer 2003; Lee et al. 2004; Tan and Gallupe 2006), and orientation (Chan et al. 1997; Chen 2010).

Additional refinements to the definition, as noted in Appendix I Table II, include using terminology other than the word "link"<sup>13</sup> used by King (1978) and others (e.g. Baets 1992; Henderson and Sifonis 1988; Lee et al. 2004). Some of these "buzz words" (Luftman and Ben-Zvi 2010 p51) include "alignment"<sup>14</sup> (e.g. Chan et al. 1997; Kearns and Lederer 2003; Sabherwal and Kirs 1994; Tallon et al. 2000), "interrelated"<sup>15</sup> (Tan and Gallupe 2006), and "harmony"<sup>16</sup> (Chen 2010). These additional word choices were used to further explain how firms bring their IT and business strategies (i.e. missions, objectives, plans, or orientations) into agreement (i.e. linking, aligning, interrelating, or harmonizing). Therefore, this type of alignment is referred to as strategic or *intellectual alignment* (Chan and Reich 2007; Reich and Benbasat 1996; 2000). One definition that encompasses the nuances of King's original definition is "the degree to which the mission, objectives, and plans contained in the business strategy are shared and supported by the IS strategy" (Chan et al. 2006 p27).

### **Operational Alignment**

In the early 1990s, researchers expanded their perspective of alignment by also considering a more internally-focused, tactical understanding of alignment. Lee and Leifer (1992) offer one of the first attempts to this end by considering the alignment between the business and IT infrastructures (Cragg et al. 2007; Kang et al. 2008; Thrasher et al. 2006 used similar terminology). Such "infrastructures" are defined as the internal design of the business or IT including policies (e.g. employee hiring or security),

---

<sup>13</sup> Defined by Merriam-Webster as "to couple or connect by or as if by a link"

<sup>14</sup> Defined by Merriam-Webster as "the act of aligning or state of being aligned; *especially*: the proper positioning or state of adjustment of parts (as of a mechanical or electronic device) in relation to each other"

<sup>15</sup> Defined by Merriam-Webster as "having a mutual or reciprocal relation"

<sup>16</sup> Defined by Merriam-Webster as "pleasing or congruent arrangement of parts"

procedures (e.g. customer service or scheduling), personnel (e.g. existing employees), systems (e.g. hardware and software), and structure (e.g. centralization vs. decentralization) (Henderson and Venkatraman 1993; 1999). Researchers expanded this conceptualization by also including internal activities and processes (e.g. Barua et al. 2004; Brown 1999; Heim and Peng 2010). These activities and processes include things like work flow, product or IT development, customer service, or data center operations (Henderson and Venkatraman 1993; 1999).

Similar to the intellectual alignment definitions, additional refinements to the definition, as noted in Appendix I Table I2, include using terminology other than the word "alignment" used by Lee and Leifer (1992). Examples include "coordinating"<sup>17</sup> (e.g. Brown 1999), "fit"<sup>18</sup> (e.g. Barua et al. 2004; Cragg et al. 2007; Thrasher et al. 2006), "integration"<sup>19</sup> (e.g. Lee et al. 2008), and "extent of adoption"<sup>20</sup> (e.g. Heim and Peng 2010). Like intellectual alignment, these synonyms were used to capture similar aspects of operational alignment. Taken together, this type of alignment is dependent on management's ability to integrate the infrastructures and processes of the business and IT rather than aligning its strategies, which is referred to as *operational alignment*. One definition that incorporates the various nuances of Lee and Leifer's (1992) original definition is "the link between organizational infrastructure and processes and I/S infrastructure and processes" (Henderson and Venkatraman 1993; 1999 p476).

---

<sup>17</sup> Defined by Merriam-Webster as "to bring into a common action, movement, or condition: harmonize"

<sup>18</sup> Defined by Merriam Webster as "to be suitable for or to harmonize with"

<sup>19</sup> Defined by Merriam-Webster as "to form, coordinate, or blend into a functioning or unified whole"

<sup>20</sup> Adoption is defined by Merriam-Webster as "to take up and practice or use"

## **Cross-Domain Alignment**

While intellectual and operational alignment examine linkages at the same level (i.e. strategy to strategy or infrastructure to infrastructure), cross-domain alignment research takes "a more holistic view" of alignment by bridging the strategy and infrastructure components (Sabherwal et al. 2001 p195). Specifically, this third type of alignment addresses the "dysfunctional" aspects of intellectual and operational alignment by considering the risks associated with redesigning key processes when strategies change (Henderson and Venkatraman 1993; 1999 p477). In other words, this type of alignment crosses the strategy and infrastructure domains such that business strategy changes may require alignment of the business/IT infrastructure and processes (e.g. Broadbent et al. 1999b; Main and Short 1989) or IT strategy changes may require alignment of the business/IT infrastructure and processes (e.g. Jordan and Tricker 1995).

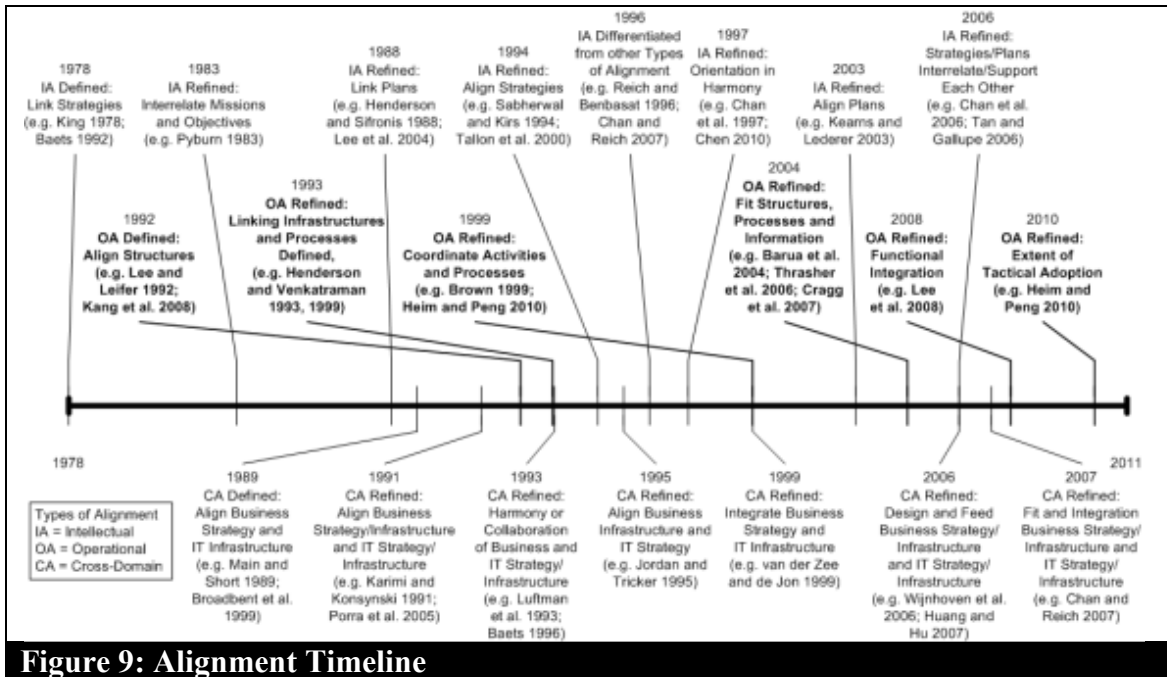
Henderson and Venkatraman (1993; 1999) defined four types of cross-domain alignment to encapsulate the different combinations of strategy and infrastructure: strategy execution, technology transformation, competitive potential, and service level. In strategy execution and technology transformation, the business strategy drives the IT infrastructure (examples of research on these perspectives: Karimi and Konsynski 1991; Main and Short 1989). Strategy execution is constrained by the business infrastructure. This suggests business strategy will impact the IT infrastructure (business strategy-to-IT infrastructure cross-domain alignment) as well as the business infrastructure (business alignment). Technology transformation is constrained by the IT strategy. This means the IT infrastructure will be affected by both the business strategy (business strategy-to-IT infrastructure cross-domain alignment) and the IT strategy (IT alignment). However,

firms pursuing the competitive potential or service level alignment perspectives use IT strategy to drive business infrastructure (an example of research on these perspectives: Jordan and Tricker 1995). Competitive potential is constrained by the business strategy. This indicates the business infrastructure will be affected by both the business strategy (business alignment) and the IT strategy (IT strategy-to-business infrastructure cross-domain alignment). Service level is constrained by the IT infrastructure. This suggests the IT strategy will impact the IT infrastructure (IT alignment) as well as the business infrastructure (IT strategy-to-business infrastructure cross-domain alignment).

Taken together, some firms may pursue alignment of the total organization (Ling et al. 2009) such that there is a simultaneous fit (e.g. Chan and Reich 2007), creation (e.g. Huang and Hu 2007; Wijnhoven et al. 2006), harmony (e.g. Luftman et al. 1993), collaboration (e.g. Baets 1996), or integration (e.g. van der Zee and de Jong 1999) between business strategy, IT strategy, business infrastructures, and IT infrastructures (e.g. Karimi and Konsynski 1991; Porra et al. 2005). Henderson and Venkatraman (1993; 1999) refer to this as a "recognition of multivariate relationships" (p477) or *cross-domain alignment*. Consolidating the various definitions from the literature, as noted in Appendix I Table I3, cross-domain alignment is best defined as "the degree of fit and integration among business strategy, IT strategy, business infrastructure, and IT infrastructure" (Chan and Reich 2007 p300; Henderson and Venkatraman 1993; 1999).

This review of the alignment literature suggests an incremental development of the construct. The first research on strategic alignment focused specifically on the concept of aligning the strategies of IT and business. While this research continues,

academics now also study the alignment of lower-level infrastructures, activities, and processes and the alignment of the total organization. This evolution of alignment is illustrated in Figure 9.



## Using SAM as a Framework

While empirical studies often reference SAM when operationalizing alignment (Ravishankar et al. 2011), many researchers view SAM as simply a high-level conceptual map that is weak, has no real-world application, and is not practical (Hu and Huang 2006; Luftman et al. 2008; Smaczny 2001; van der Zee and de Jong 1999). To address any "assumptions" of SAM (Chan and Reich 2007 p303; Huang and Lin 2006), researchers have operationalized different organizational contexts to extend SAM (e.g. Baets 1996; Broadbent and Weill 1993; Luftman et al. 1993). As a result, the existing research is littered with dozens of different definitions for the types of alignment (see Appendix I) and the original intention of SAM has, potentially, been compromised.

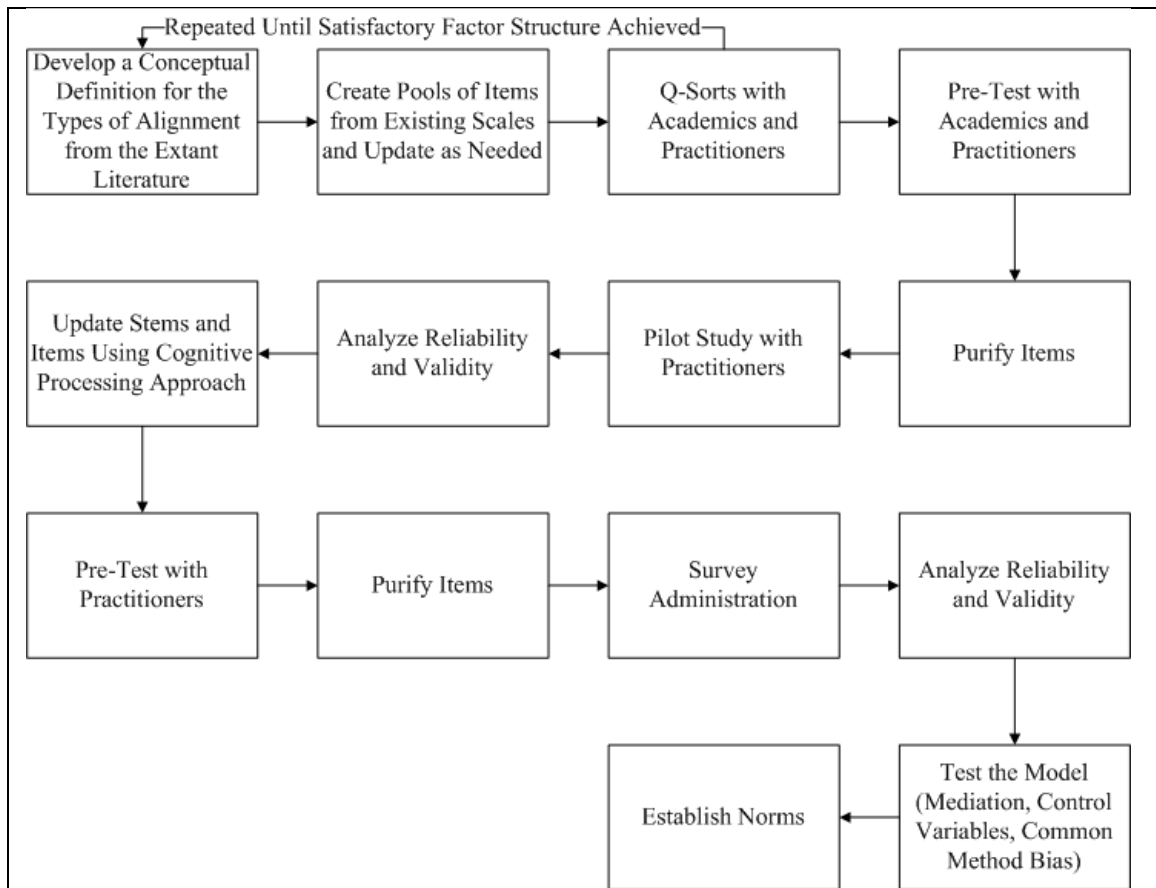
Since case study research has shown this model accurately reflects the alignment concepts used in modern businesses (Avison et al. 2004; Cooper et al. 2000), we seek to show SAM is empirically testable as well as practical. By distinguishing the different types of alignment and deriving consistent measures for the different types of alignment, we can determine if certain types of alignment may have "dysfunctional" effects on financial performance (i.e. enhancing products and services), productivity (i.e. improving sales and marketing), and customer benefit (i.e. developing positive customer relations) (Henderson and Venkatraman 1993 p477; Tallon et al. 2000). In summary, by re-establishing SAM as a comprehensive model of alignment and developing reliable and valid measures to empirically test the model, we hope to strengthen the understanding of alignment and substantiate alignment's impact on firm performance (see Dong et al. 2009 for a similar approach).

## **INSTRUMENT DEVELOPMENT PROCESS**

In the previous section, we reviewed the literature to examine how alignment has been used in prior research and by practitioners (MacKenzie et al. 2011). We have established alignment as an organizational phenomenon that addresses the end state of how IT supports the business. We will now turn to the instrument development process. Following the procedures employed by Moore and Benbasat (1991) and detailed by MacKenzie et al. (2011), we developed our instruments in multiple stages. After defining our constructs, we created pools of items for the different types of alignment by identifying potentially acceptable items from existing scales and creating new items that appeared to fit the construct definitions. After having 4 judges' panels sort the items in the pool into separate categories based on the construct definitions and the similarities



and differences among the items, we pre-tested and then purified the items. Next, we pilot tested the survey, checked reliability and validity, and then further adjusted our items. After doing another pre-test and purification, we administered the full survey and analyzed the data. This process is described in detail in the following sections and is illustrated in Figure 10.



**Figure 10: Item Development Process**

### Creating the Item Pool

As described by Moore and Benbasat (1991), the objective of this stage was to ensure content validity of the pool of existing and created items. Using the definitions for intellectual, operational, and cross-domain alignment from the literature, we looked for items that captured the domain of these definitions and adapted the items if necessary.

We collected and categorized the existing instruments for the three main types of alignment (intellectual, operational, and cross-domain) to generate an initial item pool. At this stage of item development, we drew largely from over 60 existing scales<sup>21</sup> used in the literature. While we focused on selecting items that had been carefully validated, we did not explicitly consider domain-sampling (an approach commonly used in the IT literature (e.g. Bhattacharjee 2001; Karimi et al. 2007)).

For intellectual alignment, we adapted items from Segars and Grover (1998) as these items have been commonly used by other researchers studying the alignment between IT and business strategies (e.g. Kearns and Sabherwal 2006; Lai et al. 2009; Newkirk et al. 2008). For operational alignment, we adapted items from Lee et al. (2008) and Hong and Kim (2002). We also adapted some Segars and Grover (1998) items to apply to alignment between IT and business infrastructure and processes. For cross-domain alignment, we adapted items from Hung et al. (2010), Gupta et al. (1997), Sanchez Ortiz (2003) and adapted the intellectual and operational alignment items to apply to the alignment of strategies and infrastructure/processes. For business and IT alignment, we adapted the items from cross-domain alignment to apply to the alignment of business strategies and infrastructure/processes and IT strategies and infrastructure/processes, respectively. The items illustrated in Table 17 fit the definitions of the three main types of alignment. For a complete list of the existing alignment items and the content evaluation of each item see Appendix J.

---

<sup>21</sup> There were 8 items for intellectual alignment, 30 for operational alignment, and 24 for cross-domain alignment as shown in Appendix C.

<b>Table 17: Alignment Items for Essay 2 Q-sorts</b>		
<b>Type of Alignment</b>	<b>Item</b>	<b>Q-sort</b>
Business Alignment	Adapting externally-focused business strategies and internal business processes to each other.	4
	Aligning the business's strategy and the business's infrastructure to each other.	4
	Corresponding the business's strategic direction and business processes to each other.	4
Cross-Domain Alignment	Adapting technology to strategic and process change.	1
	Adapting the goals, objectives, and processes of IS to changing goals, objectives, and processes of the organization.	1
	Aligning IS strategies and infrastructures with the strategies and infrastructures of the organization.	1
	Core processes are an important input into strategic plan.	1
	Identifying IT-related opportunities to support the strategic and operational direction of the business.	1
	Operational improvements have a direct impact on our business's ability to compete.	1
	There is a top-down planning process for linking information systems strategy to business needs.	1
	Assessing the strategic and operational importance of emerging technologies.	1,2
	Adapting IT operations to strategic business change.	2,3
	Adapting IT strategy to business operations change.	2,3
	Adapting the goals/objectives of IT to changing business operations.	2,3
	Adapting the IT operations to changing business goals/objectives.	2,3
	Aligning IT operations with the business's strategic plan.	2,3
	Aligning IT strategies with the business's operations.	2,3
	Identifying IT-related operations to support the business's strategic direction.	2,3
	Identifying IT-related strategic opportunities to support the business's operational direction.	2,3
	Adapting externally-focused IT strategies and internal business processes to each other.*	4
	Adapting higher-level IT strategies and the business infrastructure to each other.*	4
	Adapting internal IT processes and externally-focused business strategies to each other.**	4
	Adapting the IT infrastructure and business strategy to each	4

<b>Table 17: Alignment Items for Essay 2 Q-sorts</b>		
<b>Type of Alignment</b>	<b>Item</b>	<b>Q-sort</b>
	other.**	
	Aligning internal IT processes and business strategies.**	4
	Aligning IT strategies and the business's infrastructure.*	4
	Aligning the IT infrastructure and the business's strategic plan.**	4
	Corresponding externally-focused IT strategies and business infrastructure to each other.*	4
	Corresponding higher-level IT strategies and internal business processes to each other.*	4
	Corresponding internal IT processes and business strategies to each other.**	4
Intellectual Alignment	Adapting technology strategy to the business's strategic change.	1
	Adapting the goals/objectives of IS to changing goals/objectives of the organization.	1
	Aligning IS strategies with the strategic plan of the organization.	1
	Identifying IT-related opportunities to support the strategic direction of the business.	1
	Assessing the strategic importance of emerging technologies.	1,2,3,4
	Adapting IT strategy to strategic change.	2,3
	Adapting the goals/objectives of IT to changing business goals/objectives.	2,3
	Identifying IT-related strategic opportunities to support the business's strategic direction.	2,3
	Aligning IT strategies and the business's strategic plan.	2,3,4
	Adapting IT strategy and business strategy to each other.	4
	Adapting the goals/objectives of IT and business goals/objectives to each other.	4
	Identifying the fit between IT-related strategic opportunities and the business's strategic direction.	4
IT Alignment	Adapting externally-focused IT strategies and internal IT processes to each other.	4
	Aligning IT's strategy and the IT's infrastructure to each other.	4
	Corresponding IT's strategic direction and IT processes to each other.	4
Operational Alignment	Adapting technology to process change.	1
	Adapting the processes of IS to changing processes of the	1

<b>Table 17: Alignment Items for Essay 2 Q-sorts</b>		
<b>Type of Alignment</b>	<b>Item</b>	<b>Q-sort</b>
	organization.	
	Aligning IS infrastructures with the infrastructures of the organization.	1
	Business process (work flow and process) and IT process (IS development process, data center operation, etc) correspond to each other.	1
	Identifying IT-related opportunities to support the operational direction of the business.	1
	Organizational structure and IT architecture (application, database, hardware, etc) correspond to each other.	1
	The IT processes accommodate the changes required from organizational processes.	1
	The IT processes meet all needs required from organizational processes.	1
	There is a good fit between IT governance (IT management design) and organizational structure.	1
	There is a good fit between the IT architecture and the IT plan.	1
	Organizational structure and IT architecture correspond to each other.	2
	Business structure and IT architecture correspond to each other.	3
	Assessing the operational importance of emerging technologies.	1,2,3
	Adapting the IT operations to changing business operations.	2,3
	Aligning IT operations with the business's operations.	2,3
	Business operations and IT operations correspond to each other.	2,3
	Identifying IT-related operational opportunities to support the business's operational direction.	2,3
	IT operations accommodate changes required from business operations.	2,3
	IT operations meet the needs required from business operations.	2,3
	Adapting IT processes and business processes to each other.	4
	Aligning IT infrastructure and the business's infrastructure to each other.	4
	Corresponding the IT infrastructure and business infrastructure to each other.	4

**Table 17: Alignment Items for Essay 2 Q-sorts**

Type of Alignment	Item	Q-sort
	Corresponding the IT processes and business processes to each other.	4
	Identifying the fit between IT-related operational opportunities and the business's operational direction.	4
	Identifying the fit between the IT infrastructure and business infrastructure.	4
** Cross-Domain Alignment (Business Strategy to IT Infrastructure & Processes)		
* Cross-Domain Alignment (IT Strategy to Business Infrastructure & Processes)		

### **Q-Sorting Rounds**

For the q-sorts, we created a survey with the definitions listed at the top of the page as shown in Table 18. Then, the items were listed in random order below the definitions for the judges to indicate the most appropriate construct category for each item (e.g. intellectual, operational, or cross-domain alignment). Consistent with Moore and Benbasat's (1991) application of the Churchill (1979) procedure, if the judges consistently placed an item within a particular category, it was considered to demonstrate content validity. Potentially, this will indicate the items will demonstrate convergent validity with the related construct and discriminant validity with the other two constructs during survey deployment.

To assess the consistency (i.e. reliability) of the judges' sorting, we followed the procedure employed by Moore and Benbasat (1991) and measured the overall frequency with which all judges placed items within the intended theoretical construct where higher percentages of placement in the target constructs indicate higher inter-rater agreement across the panel. Scales with a higher percentage indicate the judges categorized the items into the intended type of alignment. While this is more qualitative than quantitative, the goal of this calculation is to highlight problem items and establish the content validity

of the scales (Moore and Benbasat 1991), where content validity ensures we are capturing all the possible measures of the concepts being investigated (Boudreau et al. 2001; Churchill 1979).

<b>Table 18: Construct Definitions for Essay 2</b>	
<b>Type of Alignment</b>	<b>Construct Definition</b>
Cross-Domain	The degree of fit and integration among business strategy, IT strategy, business infrastructure, and IT infrastructure.
Intellectual	The degree to which the mission, objectives, and plans contained in the business strategy are shared and supported by the IS strategy.
Operational	The link between organizational infrastructure and processes and I/S infrastructure and processes.

For the first sorting round, we involved 7 academic judges and 3 practitioner judges (see Appendix K for details on the backgrounds and qualifications of these participants). These judges were asked to sort the items based on the construct definitions we provided but were given liberty to either not sort the item or choose an "other" or "n/a" classification. Table 19 illustrates the "factor structure" (Moore and Benbasat 1991 p201) was particularly problematic regarding cross-domain alignment (i.e. a high proportion of items were either incorrectly sorted under cross-domain alignment or were not properly grouped as cross-domain alignment). Hence, we concluded the scales did not demonstrate the proper content validity and needed to be adjusted.

<b>Table 19: Item Placement Ratios - First Sorting Round</b>						
<b>Target Category</b>	<b>Actual Category</b>				<b>Total</b>	<b>Target %<sup>22</sup></b>
	Intellectual Alignment	Operational Alignment	Cross-Domain Alignment	n/a		
Intellectual Alignment	25	--	5	20	50	50%
Operational Alignment	7	64	23	16	110	58%
Cross-Domain Alignment	14	9	26	31	80	33%
Total Item Placements	240 <sup>23</sup>					
Hits	115 <sup>24</sup>					
Overall Hit Ratio	48% <sup>25</sup>					

To address the content validity issues, we re-analyzed the cross-domain alignment definition and reworded each of the items as illustrated in Table 17. We also adjusted the terminology on the intellectual and operational alignment items to ensure consistency, to make sure they were contemporary, and to smooth out the language. For example, we changed the original Segars and Grover (1998) item "Aligning IS strategies with the strategic plan of the organization" to "Aligning IT strategies with the business's strategic plan" (i.e. "organization" was changed to "business" to be consistent with other items that referred to the business, "IS" was changed to "IT" since that is the new abbreviation used in the field, and "strategic plan of the organization" was changed to "business's strategic plan" to create a more readable item). Taken together, these changes were made to address the content validity issues we saw in the first sorting exercise.

<sup>22</sup> This is calculated by dividing the diagonal value (e.g. 25 for intellectual alignment) by the total (e.g. 50 for intellectual alignment).

<sup>23</sup> This is the total number of items sorted (the sum of the Total column).

<sup>24</sup> This is calculated by adding all the diagonal values (i.e. sorting of the items into the target categories).

<sup>25</sup> This is calculated by dividing the Hits (correct sorting) by the Total Item Placements (total items sorted).



For the second sorting round, we involved 4 academic judges (see Appendix K for details on the backgrounds and qualifications of these participants). Like the first round, these judges were asked to sort the items based on the construct definitions we provided but were given liberty to either not sort the item or choose an "other" or "n/a" classification. Table 20 illustrates the "factor structure" (Moore and Benbasat 1991 p201) was still problematic regarding cross-domain alignment (i.e. a high proportion of items were not properly grouped as cross-domain alignment). Hence, we concluded the scales for cross-domain alignment still did not demonstrate the proper content validity.

<b>Table 20: Item Placement Ratios - Second Sorting Round</b>						
<b>Target Category</b>	<b>Actual Category</b>				<b>Total</b>	<b>Target %</b>
	Intellectual Alignment	Operational Alignment	Cross-Domain Alignment	n/a		
Intellectual Alignment	13	--	5	2	20	65%
Operational Alignment	1	27	3	1	32	84%
Cross-Domain Alignment	11	13	12	0	36	33%
Total Item Placements	88					
Hits	52					
Overall Hit Ratio	59%					

Since all the items had been clarified in the second round, we determined the definitions provided on the sorting document were not clear enough for the judges to make appropriate decisions. We noted the definitions we adopted from the literature were subject to multiple interpretations, particularly cross-domain alignment which could include both intellectual and operational alignment since all four domains were included

in the definition without specifying that strategies had to align with infrastructures and processes. Therefore, we further elaborated upon the definitions provided in the literature to ensure we captured both common attributes (i.e. the domains) and unique attributes (i.e. how the domains interact) across the types of alignment (MacKenzie et al. 2011).

Table 21 illustrates the old and new definitions for each construct.

<b>Table 21: Adjusted Definitions for the Alignment Sorting Exercises</b>		
<b>Construct</b>	<b>Definition in the Literature</b>	<b>Definition for the Sorting Exercise</b>
Intellectual Alignment	"the degree to which the mission, objectives, and plans contained in the business strategy are shared and supported by the IS strategy" (Chan et al. 2006 p27)	This is the STRATEGIC level and deals with how the mission, objectives, and plans contained in the business strategy are shared and supported by the IS strategy.
Operational Alignment	"the link between organizational infrastructure and processes and I/S infrastructure and processes" (Henderson and Venkatraman 1993; 1999 p476)	This is the OPERATIONAL level and deals with how the organizational infrastructure and processes links to the IT infrastructure and processes.
Cross-Domain Alignment	"the degree of fit and integration among business strategy, IT strategy, business infrastructure, and IT infrastructure" (Chan and Reich 2007 p300)	This BRIDGES the two levels above and deals with how INTELLECTUAL alignment links with OPERATIONAL alignment. This involves all aspects of bridging the strategy with operations (i.e., infrastructure and processes) such that business strategy is aligned with IT operations and IT strategy is aligned with business operations.

For the third sorting round, we involved 29 undergraduate business students as judges (see Appendix K for details on the backgrounds and qualifications of these participants). Like the previous rounds, these judges were asked to sort the items based on the construct definitions we provided but were given liberty to either not sort the item or choose an "other" or "n/a" classification. Table 22 illustrates the "factor structure"

(Moore and Benbasat 1991 p201) greatly improved for all three main types of alignment but was still problematic regarding cross-domain alignment (i.e. a high proportion of items were not properly grouped as cross-domain alignment). Hence, we concluded the scales for cross-domain alignment still did not demonstrate the proper content validity.

<b>Table 22: Item Placement Ratios - Third Sorting Round</b>						
<b>Target Category</b>	<b>Actual Category</b>				<b>Total</b>	<b>Target %</b>
	Intellectual Alignment	Operational Alignment	Cross-Domain Alignment	n/a		
Intellectual Alignment	116	12	15	2	145	80%
Operational Alignment	17	167	47	1	232	72%
Cross-Domain Alignment	39	40	153	0	232	66%
Total Item Placements	609					
Hits	436					
Overall Hit Ratio	72%					

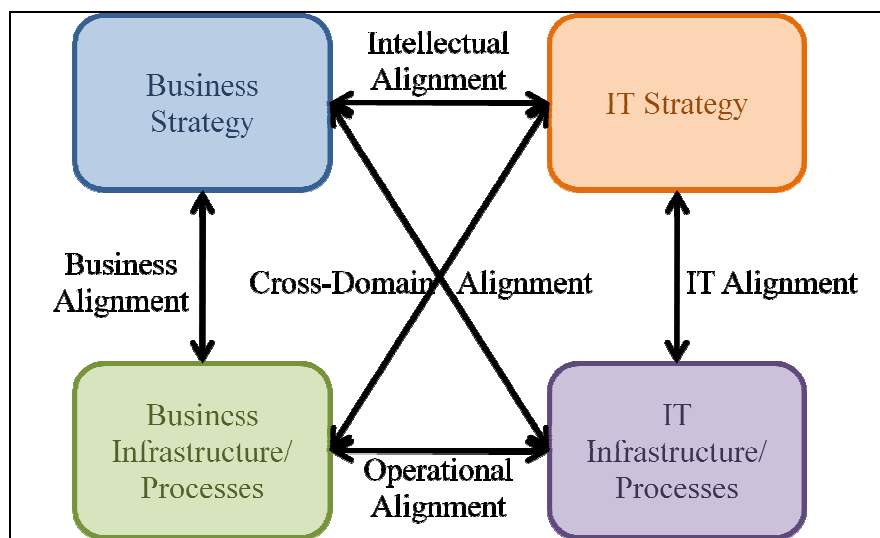
To further address the content validity issues for cross-domain alignment, we elaborated further on the definition of cross-domain alignment to try to make it clearer and to ensure it could not be confused with the definitions for intellectual and operational alignment. The new definition is "This is a holistic view of alignment that links the externally-focused strategy with the internally-focused infrastructures and processes. This involves all aspects of BRIDGING strategies with infrastructures and processes. Therefore, this includes how the business strategy links to the IT infrastructure and processes AND how the IT strategy links to the business infrastructure and processes." Unlike the previous definitions, it highlights the external versus internal components of intellectual versus operational alignment and how cross-domain alignment bridges these

two domains. We also updated the other definitions for consistency and added definitions for business and IT alignment to fully capture cross-domain alignment as shown in Table 23.

<b>Table 23: New Definitions for Alignment for Essay 2</b>		
<b>Construct</b>	<b>Definition from Q-sort 2 and 3</b>	<b>New Definition</b>
Business Alignment		Refers to the level of alignment in the BUSINESS and is the degree to which the higher-level, externally focused business strategies are aligned with the lower-level, internally focused business infrastructure and processes.
Cross-Domain Alignment (Business Strategy to IT Infrastructure & Processes)	This BRIDGES the two levels above and deals with how INTELLECTUAL alignment links with OPERATIONAL alignment. This involves all aspects of bridging the strategy with operations (i.e., infrastructure and processes) such that business strategy is aligned with IT operations and IT strategy is aligned with business operations.	Refers to all aspects of BRIDGING higher-level, externally-focused strategies with lower-level, internally-focused infrastructure and processes. This includes how the business strategy aligns with the IT infrastructure and processes.
Cross-Domain Alignment (IT Strategy to Business Infrastructure & Processes)		Refers to all aspects of BRIDGING higher-level, externally-focused strategies with lower-level, internally-focused infrastructure and processes. This includes how the IT strategy aligns with the business infrastructure and processes.
Intellectual Alignment	This is the STRATEGIC level and deals with how the mission, objectives, and plans contained in the business strategy are shared and supported by the IS strategy.	Refers to the higher-level, externally focused, STRATEGIC level of alignment and deals with how business strategy supports and is supported by the IT strategy.
IT Alignment		Refers to the level of alignment in INFORMATION TECHNOLOGY (IT) and is the degree to which the higher-level, externally focused IT strategies are aligned with the lower-level, internally focused IT infrastructure and processes.

<b>Table 23: New Definitions for Alignment for Essay 2</b>		
<b>Construct</b>	<b>Definition from Q-sort 2 and 3</b>	<b>New Definition</b>
Operational Alignment	This is the OPERATIONAL level and deals with how the organizational infrastructure and processes links to the IT infrastructure and processes.	Refers to the lower-level, internally focused, OPERATIONAL level of alignment and deals with how the business infrastructure and processes aligns with the IT infrastructure and processes.

For the fourth sorting round, we involved 5 Management PhD students and 3 Management PhDs as judges<sup>26</sup> (see Appendix K for details on the backgrounds and qualifications of these participants). In this round, we created a survey with an illustration of the different types of alignment, as shown in Figure 11, and the definitions listed at the top of the page. Then, the items were listed in random order below the illustration and definitions for the judges to indicate the most appropriate construct category for each item (e.g. intellectual, operational, cross-domain, business, or IT alignment).



**Figure 11: Diagram of the Types of Alignment**

<sup>26</sup> Individuals who declined to complete the q-sorts on all 4 rounds indicated they did not understand the definitions well enough to properly sort the items.

Similar to the previous rounds, these judges were asked to sort the items based on the construct definitions we provided but were given liberty to either not sort the item or choose an "other" or "n/a" classification. Table 24 illustrates the "factor structure" (Moore and Benbasat 1991 p201) showed high agreement among the judges (based on a similar "high" established by Moore and Benbasat (1991)). Hence, we concluded the development process resulted in scales which demonstrated content validity for all three main types of alignment with high potential to receive very good reliability coefficients.

<b>Table 24: Item Placement Ratios - Fourth Sorting Round</b>									
<b>Target Category</b>	<b>Actual Category</b>							<b>Total</b>	<b>Target %</b>
	IA	OA	CA	CAb	BA	ITA	n/a		
Intellectual Alignment (IA)	32	--	--	--	--	3	1	40	80%
Operational Alignment (OA)	--	47	--	--	--	--	--	48	97.9%
Cross-Domain Alignment – Business Strategy to IT Infrastructure & Processes (CA)	5	--	33	--	--	2	--	40	82.5%
Cross-Domain Alignment – IT Strategy to Business Infrastructure & Processes (CAb)	1	1	--	34	--	4	--	40	85%
Business Alignment (BA)	--	1	--	--	21	--	--	24	87.5%
IT Alignment (ITA)	--	--	--	--	--	24	--	24	100%
<b>Total Item Placements</b>	216								
<b>Hits</b>	191								
<b>Overall Hit Ratio</b>	88.4%								

### **Pre-Test, Purification, and Pilot Test**

The next stage of the development process is to analyze the content of the overall instrument through pre-testing and then collect representative data through pilot testing for a preliminary analysis (Churchill 1979; Moore and Benbasat 1991). For pre-testing, the lead author scheduled interviews with 2 academics well-versed in survey creation and

administration and with 6 practitioners familiar with alignment<sup>27</sup>. These interviews lasted an average of 45 minutes and the feedback was incorporated into the survey. For example, updates were made to the a) introduction such that the purpose of the survey was more clearly communicated, b) instructions in each section to clarify the purpose of the given items, and c) items to ensure they weren't too wordy and were consistent. Additionally, we added an additional item to each type of alignment to capture the synonym "matching". The complete list of items is shown in Table 25.

<b>Table 25: Items Included in the Pilot Test for Essay 2</b>		
<b>Type of Alignment</b>	<b>Item ID</b>	<b>Item</b>
Business Alignment	BA1	Matching externally-focused business <u>strategies</u> and internal business <i>processes</i> to each other.
	BA2	Adapting externally-focused business <u>strategies</u> and internal business <i>processes</i> to each other.
	BA3	Aligning the business's <u>strategy</u> and the business's <i>infrastructure</i> to each other.
	BA4	Corresponding the business's <u>strategic</u> direction and business <i>processes</i> to each other.
Cross-Domain Alignment (Business Strategy to IT Infrastructure & Processes)	CA1	Matching the IT <i>infrastructure</i> and business <u>strategy</u> to each other.
	CA2	Adapting the IT <i>infrastructure</i> and business <u>strategy</u> to each other.
	CA3	Adapting internal IT <i>processes</i> and externally-focused business <u>strategies</u> to each other.
	CA4	Aligning the IT <i>infrastructure</i> and the business's <u>strategic</u> plan.
	CA5	Aligning internal IT <i>processes</i> and business <u>strategies</u> .
	CA6	Corresponding internal IT <i>processes</i> and business <u>strategies</u> to each other.
Cross-Domain Alignment (IT Strategy to Business)	CA1b	Matching externally-focused IT <u>strategies</u> and internal business <i>processes</i> to each other.
	CA2b	Adapting externally-focused IT <u>strategies</u> and internal business <i>processes</i> to each other.
	CA3b	Adapting higher-level IT <u>strategies</u> and the business

<sup>27</sup> 3 CIOs (Clyde Fowler, Greenfield Industries; Keith Knight, TTI Group North America; Chris Palmer, Concentrix), 1 CTO (Jim Pepin, Clemson University), 1 former CIO (Phil Yanov, Greenville Spartanburg Anderson Technology Council), and 1 CIO consultant (Bill Bliss, Bliss & Associates Inc.)

<b>Table 25: Items Included in the Pilot Test for Essay 2</b>		
<b>Type of Alignment</b>	<b>Item ID</b>	<b>Item</b>
Infrastructure & Processes)		<i>infrastructure</i> to each other.
	CA4b	Aligning IT <u>strategies</u> and the business's <i>infrastructure</i> .
	CA5b	Corresponding externally-focused IT <u>strategies</u> and business <i>infrastructure</i> to each other.
	CA6b	Corresponding higher-level IT <u>strategies</u> and internal business <i>processes</i> to each other.
Intellectual Alignment	IA1	Matching IT <u>strategy</u> and business <u>strategy</u> to each other.
	IA2	Adapting IT <u>strategy</u> and business <u>strategy</u> to each other.
	IA3	Adapting the <u>goals/objectives</u> of IT and business <u>goals/objectives</u> to each other.
	IA4	Aligning IT <u>strategies</u> and the business's <u>strategic plan</u> .
	IA5	Assessing the <u>strategic</u> importance of emerging technologies.
	IA6	Identifying the fit between IT-related <u>strategic</u> opportunities and the business's <u>strategic</u> direction.
IT Alignment	ITA1	Matching externally-focused IT <u>strategies</u> and internal IT <i>processes</i> to each other.
	ITA2	Adapting externally-focused IT <u>strategies</u> and internal IT <i>processes</i> to each other.
	ITA3	Aligning IT's <u>strategy</u> and the IT's <i>infrastructure</i> to each other.
	ITA4	Corresponding IT's <u>strategic</u> direction and IT <i>processes</i> to each other.
Operational Alignment	OA1	Matching IT <i>processes</i> and business <i>processes</i> to each other.
	OA2	Adapting IT <i>processes</i> and business <i>processes</i> to each other.
	OA3	Aligning IT <i>infrastructure</i> and the business's <i>infrastructure</i> to each other.
	OA4	Identifying the fit between IT-related <i>operational</i> opportunities and the business's <i>operational</i> direction.
	OA5	Corresponding the IT <i>processes</i> and business <i>processes</i> to each other.
	OA6	Corresponding the IT <i>infrastructure</i> and business <i>infrastructure</i> to each other.
	OA7	Identifying the fit between the IT <i>infrastructure</i> and business <i>infrastructure</i> .

Once the pre-testing was complete and the survey was updated appropriately, a pilot of the overall instrument was administered by providing the survey's website link to



Chief Information Officers (CIOs) within the lead author's network<sup>28</sup>, on the lead author's LinkedIn profile, as a discussion on LinkedIn's CIO Network group, and through *Research Now*<sup>29</sup>. We chose to target CIOs as the key informant because the CIO is a key person to make alignment decisions regarding IT, has an eye on the external environment due to an upper level management position, and can assess the firm's alignment level (Huber and Power 1985). Since we were trying to capture the most senior IT professional in the company, other acceptable titles include Director of IT, Vice President of IT, and Chief Technology Officer (Armstrong and Sambamurthy 1999; Banker et al. 2011; Grover et al. 1993; Preston and Karahanna 2009). We also asked these CIOs (the other titles are included in this categorization here and throughout the paper) to forward this link to CIOs in their network (i.e. snowballing) to increase the sample size for this pilot study. The demographic statistics for the respondents are illustrated in Table 26.

**Table 26: Demographic Statistics for the Pilot Study of Essay 2 (n=35)**

Characteristic		Frequency		
Gender	Male	32		
	Female	1		
	Unreported	2		
College Education	Average = 5.6 years			
Experience		Industry	CIO	IT
	<1 year	2	2	
	1-5 years	8	13	
	6-10 years	10	9	2
	11-15 years	8	6	5
	16+ years	6	4	26
Status	Direct Report to CEO	14		
	One Level to CEO	16		
	2+ Levels to CEO	5		
Age	Average = 51.8			

<sup>28</sup> E-mails were sent to CIOs the lead author knows personally and also to working friends of the lead author. These individuals then forwarded the link to their CIOs.

<sup>29</sup> <http://www.researchnow.com/>

Characteristic		Frequency
Firm Type	Public	13
	Private	17
	Unreported	5
Firm Size (revenue in \$millions)	<100	9
	101-500	8
	501-1000	5
	>1000	10
Industry	Manufacturing	7
	Service	7
	Other	21

### **Pilot Study Reliability, Convergent Validity, and Discriminant Validity Analyses**

Upon collecting measures for all the constructs, we verified the unidimensionality of the three main types of alignment by running a confirmatory factor analysis and checking the mean, skewness, kurtosis, loadings, and breadth of the constructs (Noar 2003). We used SmartPLS 2.0 (Ringle et al. 2005) to run this analysis because it allows us to analyze both the measurement and structural paths in one analysis, we could perform a confirmatory factor analysis, and it supports a smaller sample size than other SEM packages (Gefen et al. 2000). Table 27 shows the confirmatory factor analysis results, where some of the cross-loadings were high enough to suggest there may be problems (e.g. CA1b has a loading of 0.63 on IT strategy-to-business infrastructure and processes cross-domain alignment but even higher loadings on the other constructs).

Item	Factor					
	BA	CA	CAb	IA	ITA	OA
BA1	<b>0.72</b>	0.49	0.45	0.60	0.65	0.50
BA2	<b>0.94</b>	0.65	0.62	0.67	0.75	0.67
BA3	<b>0.92</b>	0.70	0.74	0.72	0.71	0.70
BA4	<b>0.96</b>	0.61	0.68	0.68	0.71	0.61

**Table 27: Confirmatory Factor Analysis for the Pilot Study for Essay 2**

Item	Factor					
	CA1	0.55	<b>0.65</b>	0.54	0.63	0.58
CA2	0.53	<b>0.79</b>	0.70	0.58	0.55	0.70
CA3	0.64	<b>0.94</b>	0.84	0.73	0.68	0.85
CA4	0.49	<b>0.73</b>	0.61	0.58	0.66	0.68
CA5	0.48	<b>0.88</b>	0.77	0.63	0.60	0.79
CA6	0.55	<b>0.88</b>	0.83	0.63	0.60	0.81
CA1b	0.64	0.68	<b>0.63</b>	0.69	0.65	0.63
CA2b	0.70	0.87	<b>0.95</b>	0.76	0.68	0.78
CA3b	0.61	0.83	<b>0.94</b>	0.72	0.56	0.72
CA4b	0.55	0.70	<b>0.89</b>	0.60	0.47	0.63
CA5b	0.63	0.82	<b>0.92</b>	0.67	0.59	0.75
CA6b	0.49	0.61	<b>0.86</b>	0.56	0.41	0.55
IA1	0.53	0.54	0.48	<b>0.74</b>	0.54	0.50
IA1	0.60	0.74	0.77	<b>0.80</b>	0.47	0.66
IA3	0.50	0.74	0.68	<b>0.83</b>	0.61	0.64
IA4	0.64	0.63	0.69	<b>0.89</b>	0.61	0.55
IA5	0.68	0.55	0.45	<b>0.68</b>	0.54	0.61
IA6	0.58	0.62	0.64	<b>0.77</b>	0.66	0.52
ITA1	0.60	0.49	0.39	0.56	<b>0.76</b>	0.44
ITA2	0.69	0.71	0.65	0.60	<b>0.88</b>	0.63
ITA3	0.47	0.66	0.61	0.57	<b>0.76</b>	0.54
ITA4	0.65	0.72	0.64	0.64	<b>0.84</b>	0.63
OA1	0.44	0.43	0.37	0.48	0.46	<b>0.46</b>
OA2	0.35	0.57	0.63	0.42	0.35	<b>0.70</b>
OA3	0.52	0.63	0.61	0.52	0.49	<b>0.71</b>
OA4	0.61	0.76	0.62	0.57	0.57	<b>0.88</b>
OA5	0.44	0.76	0.65	0.48	0.42	<b>0.80</b>
OA6	0.52	0.77	0.67	0.57	0.49	<b>0.79</b>
OA7	0.54	0.70	0.57	0.50	0.59	<b>0.74</b>

BA = Business Alignment, CA = Cross-Domain Alignment (where b denotes IT strategy to business infrastructure and processes), IA = Intellectual Alignment, ITA = IT Alignment, OA = Operational Alignment

While coefficient alpha (i.e. Cronbach's alpha) is one of many ways to perform a reliability analysis (Cronbach and Shavelson 2004), it is standard in most reliability

discussions and is considered acceptable between 0.50 and 0.60 during the early stages of research (Nunnally 1967). Since alignment, as a whole, is somewhat established, we chose to follow Moore and Benbasat's minimum reliability range of 0.70 to 0.80 (1991). We also looked for any severe nonnormality issues (skewness > 2, kurtosis > 7)<sup>30</sup> (Fabrigar et al. 1999). Table 28 reveals satisfactory alpha levels<sup>31</sup> and no nonnormality problems. Hence, we believe the distribution of the alignment types is appropriate for the statistical tests used in this study.

<b>Table 28: Reliability and Normality Test Results for the Essay 2 Pilot Study</b>					
<b>Construct</b>	<b>Reliability<sup>^</sup></b>	<b>Mean</b>	<b>St. Dev</b>	<b>Skewness (error)</b>	<b>Kurtosis (error)</b>
Intellectual Alignment (IA)	0.91	22.03	4.42	-0.38 (0.41)	-0.30 (0.81)
Operational Alignment (OA)	0.89	26.34	4.01	-0.85 (0.41)	2.08 (0.81)
Cross-Domain Alignment – Business Strategy to IT Infrastructure & Processes (CA)	0.92	23.46	4.42	-0.62 (0.41)	0.51 (0.81)
Cross-Domain Alignment – IT Strategy to Business Infrastructure & Processes (CAb)	0.95	21.04	4.56	-0.50 (0.41)	0.39 (0.81)
Business Alignment (BA)	0.94	14.44	3.18	0.03 (0.41)	-0.04 (0.81)
IT Alignment (ITA)	0.89	14.47	3.04	-0.67 (0.41)	-0.25 (0.81)
<sup>^</sup> Composite Reliability					

Then, we conducted an analysis to investigate convergent and discriminant validity for the constructs. For convergent validity, we evaluated the loading of each item onto their specified factor (Chin and Frye 1996). First, we compared the coefficients for the indicators with the standard errors, where the loadings should be at least twice as

<sup>30</sup> We used SPSS 15.0 for Windows Grad Pack (LEADTOOLS 2006) to perform this analysis.

<sup>31</sup> The formula for alpha is  $(k/(k-1))/(1-\sum s_i^2/s_t^2)$  (Cronbach and Shavelson 2004). As such, alpha is influenced by the number of items as well as the standard deviation (Cronbach and Shavelson 2004).

much as the standard error (Anderson and Gerbing 1988). Second, a t-statistic of 1.69 or higher suggests that the item loading is significant at 0.05 (n=35). A t-statistic of 1.31 or higher suggests that the item loading is significant at 0.1 (n=35). All significant loadings are marked in Table 29. Out of 33 loadings, 2 were insignificant.

<b>Table 29: Convergent Validity Test for the Essay 2 Pilot Study</b>					
<b>Item</b>	<b>t-value (STERR)</b>	<b>Item</b>	<b>t-value (STERR)</b>	<b>Item</b>	<b>t-value (STERR)</b>
CA1	1.25 (0.41)	BA1	2.01** (0.37)	ITA1	1.72** (0.41)
CA1b	1.37* (0.42)	BA2	1.93** (0.45)	ITA2	1.92** (0.50)
CA2	1.62* (0.39)	BA3	1.83** (0.45)	ITA3	1.58* (0.52)
CA2b	1.97** (0.41)	BA4	1.87** (0.46)	ITA4	1.80** (0.52)
CA3	1.90** (0.39)	IA1	2.14** (0.29)	OA1	0.86 (0.46)
CA3b	1.92** (0.39)	IA2	2.04** (0.35)	OA2	1.48* (0.43)
CA4	1.46* (0.40)	IA3	2.09** (0.34)	OA3	1.50* (0.50)
CA4b	1.80** (0.38)	IA4	2.15** (0.34)	OA4	1.76** (0.49)
CA5	1.74** (0.42)	IA5	1.89** (0.32)	OA5	1.62* (0.50)
CA5b	1.84** (0.40)	IA6	2.19** (0.30)	OA6	1.66* (0.46)
CA6	1.79** (0.41)			OA7	1.61* (0.47)
CA6b	1.80** (0.37)				

\*significant at 0.1; \*\*significant at 0.05; IA = Intellectual Align.; OA = Operational Align.; CA = Cross-Domain Align. (where b denotes IT strategy to business infrastructure and processes); BA = Business Alignment; ITA = IT Alignment; STERR = Standard Error

Following the evaluation of convergent validity, we evaluated discriminant validity. To do so, we entered all first-order factors in a correlation matrix. To assess discriminant validity, we compared cross factor correlations against the square root of the average variance extracted of each factor (Chin and Frye 1996). If the cross factor correlation exceeds the square root of the average variance extracted, there may be a lack of discriminant validity. The correlation matrixes are illustrated in Tables 30 and 31. Evaluating the correlation matrix suggests several cross factor correlations (highlighted in yellow). In summary, the pilot test demonstrated discriminant and convergent validity problems with the different types of alignment, so we made additional adjustments to our survey items as discussed in detail in the next section.

Table 30: Discriminant Validity Analysis for the Essay 2 Pilot Study																			
	IA1	IA2	IA3	IA4	IA5	IA6	OA1	OA2	OA3	OA4	OA5	OA6	OA7	CA1	CA2	CA3	CA4	CA5	CA6
IA1	<b>.78</b>																		
IA2	.80	<b>.78</b>																	
IA3	.71	.66	<b>.78</b>																
IA4	.68	.70	.74	<b>.78</b>															
IA5	.63	.55	.38	.46	<b>.78</b>														
IA6	.68	.59	.61	.61	.59	<b>.78</b>													
OA1	.49	.55	.62	.48	.28	.44	<b>.74</b>												
OA2	.43	.45	.50	.30	.20	.41	.87	<b>.74</b>											
OA3	.50	.53	.51	.33	.63	.62	.55	.61	<b>.74</b>										
OA4	.52	.59	.54	.45	.60	.42	.52	.53	.70	<b>.74</b>									
OA5	.63	.65	.48	.26	.47	.43	.57	.63	.69	.78	<b>.74</b>								
OA6	.50	.64	.41	.51	.55	.46	.44	.40	.56	.66	.64	<b>.74</b>							
OA7	.40	.53	.38	.38	.54	.50	.55	.50	.69	.61	.65	.76	<b>.74</b>						
CA1	.67	.76	.71	.58	.54	.59	.70	.61	.61	.68	<b>.79</b>	.70	.66	<b>.82</b>					
CA2	.57	.66	.50	.38	.54	.57	.61	.49	.70	.52	.73	.66	<b>.87</b>	.83	<b>.82</b>				
CA3	.68	<b>.81</b>	.67	.59	.55	.58	.65	.58	.63	<b>.80</b>	<b>.80</b>	<b>.74</b>	.64	.92	.74	<b>.82</b>			
CA4	.46	.49	.53	.49	.50	.67	.39	.40	.69	.57	.62	<b>.76</b>	<b>.80</b>	.65	.70	.64	<b>.82</b>		
CA5	.61	.67	.60	.55	.47	.59	.51	.46	.63	<b>.76</b>	<b>.75</b>	<b>.85</b>	.70	.86	.70	.85	.82	<b>.82</b>	
CA6	.67	.72	.70	.50	.40	.56	.69	.61	.71	<b>.78</b>	<b>.83</b>	.67	.67	.89	.77	.87	.67	.89	<b>.82</b>
CA1b	.69	<b>.81</b>	.69	.70	.63	.63	.56	.55	.66	.72	<b>.74</b>	<b>.77</b>	.61	.88	.71	.90	.72	.89	.87
CA2b	.71	.77	.71	.63	.45	.66	.67	.65	.62	.69	.70	.59	.53	.86	.68	.87	.58	.76	.87
CA3b	.67	.73	.58	.62	.47	.65	.55	.49	.54	.57	.62	.72	.54	.86	.71	.79	.61	.80	.77
CA4b	.56	.71	.56	.59	.29	.54	.71	.63	.63	.51	.59	.58	.54	.76	.66	.72	.51	.68	.80
CA5b	.62	.79	.58	.65	.40	.60	.64	.62	.66	.68	.68	.72	.63	.84	.68	.86	.66	.83	.85
CA6b	.57	.64	.57	.48	.22	.55	.69	.65	.58	.36	.55	.48	.43	.65	.60	.59	.47	.55	.71
BA1	.54	.61	.50	.53	.64	.63	.45	.45	.63	.59	.61	.47	.52	.58	.54	.63	.61	.54	.61
BA2	.53	.59	.47	.59	.68	.50	.51	.32	.51	.67	.49	.47	.56	.61	.53	.65	.44	.49	.59
BA3	.53	.65	.50	.65	.66	.61	.41	.42	.59	.61	.48	.66	.60	.62	.56	.68	.63	.61	.58
BA4	.57	.59	.43	.59	.64	.59	.51	.32	.51	.58	.40	.47	.52	.61	.53	.61	.40	.44	.55
ITA1	.49	.42	.57	.43	.53	.71	.41	.35	.58	.49	.50	.37	.52	.51	.54	.59	.65	.55	.62
ITA2	.48	.55	.52	.53	.51	.69	.47	.44	.62	.64	.55	.53	.68	.63	.63	.75	.70	.68	.70
ITA3	.50	.41	.53	.52	.37	.69	.39	.40	.48	.46	.50	.53	.54	.64	.52	.60	<b>.79</b>	.74	.62
ITA4	.50	.55	.55	.67	.48	.60	.45	.31	.52	.65	.45	.63	.63	.65	.55	.71	<b>.71</b>	.76	.69

<b>Table 30 (cont): Discriminant Validity Analysis for the Essay 2 Pilot Study</b>														
	CA1b	CA2b	CA3b	CA4b	CA5b	CA6b	BA1	BA2	BA3	BA4	ITA1	ITA2	ITA3	ITA4
CA1b	<b>.87</b>													
CA2b	.94	<b>.87</b>												
CA3b	.91	.89	<b>.87</b>											
CA4b	.80	.81	.80	<b>.87</b>										
CA5b	.94	.89	.85	.92	<b>.87</b>									
CA6b	.72	.79	.78	.92	.79	<b>.87</b>								
BA1	.68	.70	.59	.59	.66	.59	<b>.89</b>							
BA2	.71	.65	.51	.53	.59	.42	.88	<b>.89</b>						
BA3	.79	.72	.67	.61	.74	.53	.87	.82	<b>.89</b>					
BA4	.71	.69	.60	.57	.63	.51	.88	.92	.86	<b>.89</b>				
ITA1	.58	.65	.48	.45	.51	.48	.73	.72	.57	.68	<b>.82</b>			
ITA2	.70	.70	.56	.59	.73	.47	.72	.72	.70	.68	.88	<b>.82</b>		
ITA3	.70	.64	.61	.50	.62	.46	.62	.44	.56	.40	.79	.78	<b>.82</b>	
ITA4	.72	.65	.59	.58	.73	.40	.61	.67	.70	.63	.70	.86	.82	<b>.82</b>

<b>Table 31: Construct Correlation Matrix for the Essay 2 Pilot Study</b>						
	BA	CA	CAb	ITA	IA	OA
Business Alignment (BA)	<b>0.89</b>					
Cross-Domain Alignment – Business Strategy to IT Infrastructure & Processes (CA)	0.68	<b>0.82</b>				
Cross-Domain Alignment – IT Strategy to Business Infrastructure & Processes (CAb)	0.71	<b>0.88</b>	<b>0.87</b>			
IT Alignment (ITA)	0.74	0.76	0.66	<b>0.82</b>		
Intellectual Alignment (IA)	<b>0.78</b>	<b>0.79</b>	<b>0.78</b>	0.72	<b>0.78</b>	
Operational Alignment (OA)	0.69	<b>0.91</b>	<b>0.79</b>	0.72	0.67	<b>0.74</b>
<b>Diagonals = square-root AVE</b>						
Off-Diagonals = Correlations						
Cross-factor correlations that exceed the AVE (potential lack of discriminant validity)						

### **Further Instrument Development, Testing, and Purification**

Due to the discriminant and convergent validity problems revealed in the pilot study, we determined our item development procedure needed to be re-evaluated. We first took a critical look at our definitions illustrated in Table 23 based on the recommendations of MacKenzie et al. (2011). Established in the literature, these definitions capture alignment as a static, organizational phenomenon representing the relationship between the business and IT. They specify the conceptual theme of alignment in that each definition addresses the common and unique attributes of each type of alignment in an unambiguous way. Based on the results of our fourth q-sort, we concluded that we had established a reasonable, supportable, and holistic representation/definition of the domain of alignment (Lewis et al. 1995; Lewis et al. 2005).

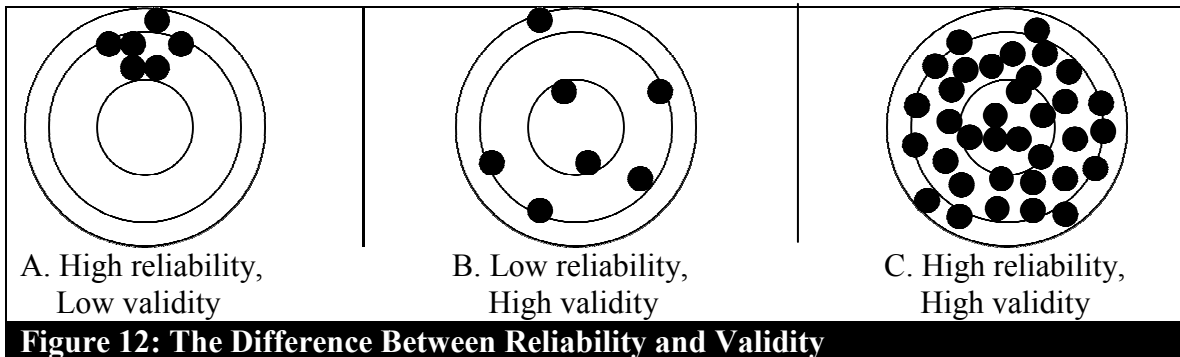
Since our conceptual definitions of the different types of alignment are clear and concise, we then re-considered our items. We analyzed and compared two approaches to item creation: "domain-sampling" (Nunnally 1967 p175) and "cognitive processing" (Jobe 2003 p219). Domain-sampling is the process of selecting or generating candidate items that will faithfully capture the established domain (Nunnally 1967). This process favors parsimony (the optimal number of items versus maximal accuracy) in that the fewest number of items should be included to validly represent the domain and achieve an acceptable reliability (Joshi 1989; Little et al. 1999). The cognitive processing approach conceptualizes the thought-process between the item presentation and response (Jobe 2003; Karabenick et al. 2007). By understanding the cognitive processes of the



respondents and including corresponding instructions and examples to ensure the options are properly understood, researchers can improve their measurement validity and reliability with fewer, and more similar, individual items (Forsyth and Lessler 1991; Karabenick et al. 2007).

As indicated in the description of these approaches, they can be differentiated by how they satisfy concerns over validity and reliability. Validity is used to determine whether the variable represents the construct (i.e. captures the centroid) (Little et al. 1999). Reliability is the consistency of the measures such that individual but comparable measures agree (Barclay et al. 1995; Chin 1998; Nunnally and Bernstein 1994). Figure 12 presents a graphical representation of the difference between these two concepts. Most importantly, this figure shows reliability does not mean validity and vice versa. For example, Figure 12A shows the researcher did not capture the centroid (i.e. low validity) even though his items were consistent (i.e. high reliability). While it seems tempting to choose measures that have a high reliability because they are consistent, these measures are subject to an attenuation paradox. This means the measures are highly correlated but they are not beneficial because it just means the researcher sampled a narrow domain (Clark and Watson 1995) without necessarily capturing the centroid of the construct (e.g. Figure 12A) (Little et al. 1999). If a researcher focuses on high reliability without considering validity, he is not measuring what he's supposed to be measuring even though he's doing a good job of it. In this case, it is more important to maximize validity over reliability to make sure the construct in question is being measured even if it isn't being measured very consistently across items (e.g. Figure 12B) (Clark and Watson 1995;

Little et al. 1999). Ideally, a researcher would want to have both high validity and high reliability as shown in Figure 12C; however, this figure also illustrates the trade-off of the maximal principle: many more items are required to achieve both high validity and high reliability.



**Figure 12: The Difference Between Reliability and Validity**

Specifically, the difference between the domain-sampling and cognitive processing approaches concerns the length of the stems and the number of items. For domain-sampling, item stems are typically one- to three-word phrases designed to capture a piece of the construct in a parsimonious way (Lewis et al. 2005). Since these phrases are subjectively selected by the researcher, they represent imprecise depictions of the construct and may have different meanings based on specific situations (e.g. a frequency expression like "sometimes", "generally", or "often" depend on the individual's perception of a normal scenario) (Hufnagel and Conca 1994; Lewis et al. 2005; Schwarz et al. 1998). In an ideal situation, the minimum number of items will capture the construct consistently across all the measures and any discrepancies between the researcher's and respondent's interpretation of the items should be mitigated by an adequate sample size (Lewis et al. 2005). However, for broad constructs, this minimum number may be quite large in order to cover the entire domain of the construct. Additionally, the items may not

share a high degree of communality since they deal with different aspects of the domain, so the reliability of these items may be lower (Little et al. 1999).

For the cognitive processing approach, researchers develop richer stems that provide precise definitions and examples from practice instead of using many simple phrases designed by the researcher (Lewis et al. 2005). This approach reduces the number of items required to capture a broad construct because the complexity of the construct is addressed in the stem (Jobe 2003). While using fewer and simpler items increases the reliability, it introduces a social desirability response bias because respondents may be more likely to respond positively if they think a positive example is the best (Podsakoff et al. 2003; Schwarz et al. 1998).

We concluded a cognitive processing approach would be more appropriate to validly and reliably capture the domain of alignment for two reasons. First, alignment is a broad construct with many nuances. For example, operational and cross-domain alignment include all the firm's operations, infrastructures, and processes. Since this includes a wide range of activities (e.g. hiring, software purchases, centralization), it is difficult to capture all the necessary components consistently and parsimoniously in a few items. Second, alignment has not been clearly defined in the literature or in practice. As discussed previously, each type of alignment has numerous definitions in the literature and is discussed in multiple ways by practitioners. As a result, it is difficult to determine how respondents interpret items since their understanding of the different concepts is questionable. Through the cognitive processing approach, we could provide a definition of the construct to the respondents along with a real-world example and picture to direct

their thinking. In other words, this approach presents far richer stems to describe the complex alignment concept as opposed to the simpler items presented in domain-sampling. While the respondent has to take more time reading the definitions and examples, items generated from domain-sampling would involve too many concepts and require too many items to capture the full construct and still maintain an acceptable reliability.

After we created the detailed stems, examples, and pictures, we administered another pre-test to ensure our respondents would read the questions the way we intended. The lead author scheduled interviews with 2 more CIO practitioners familiar with alignment<sup>32</sup>. These interviews lasted an average of 60 minutes and the feedback was incorporated into the survey. Specifically, we gathered information about exactly how the CIOs interpreted the questions (i.e. we asked them to put the items in their own words). Based on their feedback, updates were made to the a) wording of certain items for additional clarity and the b) stems of some questions to guide respondent thinking. The complete list of items is shown in Table 32 and the stems are illustrated in Table 33. The complete instrument, with pictures, is illustrated in Appendix L.

<b>Table 32: Items Included in the Essay 2 Full Study</b>		
<b>Type of Alignment</b>	<b>Item ID</b>	<b>Item</b>
Business Alignment	BA1	Our <i>business processes</i> support our <u>business strategies</u> .
	BA2	We adapt our <u>business strategies</u> to our <i>internal business processes</i> .
	BA3	Our <u>business strategies</u> and <i>internal business processes</i> match each other.

<sup>32</sup> These CIOs requested anonymity due to the sensitive nature of their industries. Both companies have locations world-wide. The locations the CIOs are responsible for have 200+ employees with revenues over \$10 million.

**Table 32: Items Included in the Essay 2 Full Study**

<b>Type of Alignment</b>	<b>Item ID</b>	<b>Item</b>
	BA4	We identify the fit between our <u>business-related strategic opportunities</u> and our <u>business infrastructure</u> .
	BA5	Our <u>business infrastructure</u> and <u>business strategies</u> correspond to each other.
	BA6	Our <u>business infrastructure</u> aligns with our <u>business strategies</u> .
Cross-Domain Alignment (Business Strategy to IT Infrastructure & Processes)	CABS2ITO1	Our <u>IT processes</u> support our business strategies.
	CABS2ITO2	We adapt our <u>internal IT processes</u> to our <u>business strategies</u> .
	CABS2ITO3	Our <u>business strategies</u> and <u>internal IT processes</u> match each other.
	CABS2ITO4	We identify the fit between our <u>business-related strategic opportunities</u> and our <u>IT infrastructure</u> .
	CABS2ITO5	Our <u>IT infrastructure</u> and <u>business strategies</u> correspond to each other.
	CABS2ITO6	Our <u>IT infrastructure</u> aligns with our <u>business strategies</u> .
Cross-Domain Alignment (IT Strategy to Business Infrastructure & Processes)	CAITS2BSO1	Our <u>IT strategies</u> support our <u>business processes</u> .
	CAITS2BSO2	We adapt our <u>IT strategies</u> to our <u>internal business processes</u> .
	CAITS2BSO3	Our <u>externally-focused IT strategies</u> and <u>internal business processes</u> match each other.
	CAITS2BSO4	We identify the fit between our <u>IT-related strategic opportunities</u> and our <u>business infrastructure</u> .
	CAITS2BSO5	Our <u>business infrastructure</u> and <u>IT strategies</u> correspond to each other.
	CAITS2BSO6	Our <u>business infrastructure</u> aligns with our <u>externally-focused IT strategies</u> .
Intellectual Alignment	IA1	Our <u>IT strategies</u> support our <u>business strategies</u> .
	IA2	Our <u>IT strategy</u> and <u>business strategy</u> match each other.
	IA3	We adapt our <u>IT strategy</u> to <u>business strategic change</u> .
	IA4	Our <u>IT strategies</u> align with our <u>business's strategic plan</u> .
	IA5	We assess the <u>strategic importance of emerging technologies</u> .
	IA6	We adapt our <u>IT goals and objectives</u> to our <u>business goals and objectives</u> .
	IA7	We identify the fit between our <u>IT-related strategic opportunities</u> and our <u>business's strategic direction</u> .
	IA8	Our <u>IT strategies</u> and <u>business strategies</u> correspond to

**Table 32: Items Included in the Essay 2 Full Study**

Type of Alignment	Item ID	Item
		each other.
IT Alignment	ITA1	Our <i>IT processes</i> support our <i>IT strategies</i> .
	ITA2	We adapt our <i>IT strategies</i> to our <i>internal IT processes</i> .
	ITA3	Our <i>IT strategies</i> and <i>internal IT processes</i> match each other.
	ITA4	We identify the fit between our <i>IT-related strategic opportunities</i> and our <i>IT infrastructure</i> .
	ITA5	Our <i>IT infrastructure</i> and <i>IT strategies</i> correspond to each other.
	ITA6	Our <i>IT infrastructure</i> aligns with our <i>IT strategies</i> .
Operational Alignment	OA1	Our <i>IT processes</i> support our <i>business processes</i> .
	OA2	We adapt our <i>IT processes</i> to our <i>business processes</i> .
	OA3	Our <i>IT processes</i> and <i>business processes</i> match each other.
	OA4	We identify the fit between our <i>IT infrastructure</i> and our <i>business infrastructure</i> .
	OA5	Our <i>IT infrastructure</i> and <i>business infrastructure</i> correspond to each other.
	OA6	Our <i>IT infrastructure</i> aligns with our <i>business infrastructure</i> .
Alignment for Common Method Bias Test	ACMB1	Firms should seek to align business and IT.
	ACMB2	IT should always adjust to business.
	ACMB3	Business should always adjust to IT.
	ACMB4	Alignment is good.
Financial Performance <sup>33</sup>	PERF1	The sales growth position relative to our principal competitors is...
	PERF2	Our executive team's satisfaction with the sales growth rate is...
	PERF3	The market share gains relative to our principal competitors are...
	PERF4	The return on corporate investment position relative to our principal competitors is...
	PERF5	Our executive team's satisfaction with the return on corporate investment is...
	PERF6	Our executive team's satisfaction with return on sales is...
	PERF7	The net profit position relative to our principal competitors is...

<sup>33</sup> Adapted from Croteau and Raymond (2004).

**Table 32: Items Included in the Essay 2 Full Study**

Type of Alignment	Item ID	Item
	PERF8	The financial liquidity position relative to our principal competitors is...

**Table 33: Stems Included in the Essay 2 Full Study**

Construct	Stem
Intellectual Alignment	Thinking about the alignment between your higher-level, externally focused <u>business strategies</u> and <u>IT strategies</u> (see red arrow in above figure <sup>34</sup> ), to what extent are the following functions fulfilled in your firm? We are trying to get a sense of whether your <u>IT strategy</u> supports how your <u>business competes in the market</u> . For example, if your <u>IT mission and goals</u> are tightly integrated with your <u>business mission and goals</u> , you would select "Entirely Fulfilled". In my firm...
Operational Alignment	Thinking about the alignment between your lower-level, internally focused <i>business infrastructure and processes</i> and <i>IT infrastructure and processes</i> (see red arrow in above figure), to what extent are the following functions fulfilled in your firm? We are trying to get a sense of whether you have <i>technical capabilities</i> in place to support your <i>business processes</i> . For example, if your <i>IT policies, procedures, personnel, and systems</i> strongly support your <i>internal business policies, procedures, personnel, and structure</i> , you would select "Entirely Fulfilled". In my firm...
Cross-Domain Alignment (Business Strategy to IT Infrastructure & Processes)	Thinking about the bridge between your higher-level, externally-focused <u>business strategies</u> and your lower-level, internally-focused <i>IT infrastructure and processes</i> (see red arrow in above figure), to what extent are the following functions fulfilled in your firm? We are trying to get a sense of whether your <i>technical capabilities</i> help you execute and develop your <u>strategy for competing in the market</u> . For example, if your <i>IT policies, procedures, personnel, and systems</i> strongly support your <u>business mission and goals</u> , you would select "Entirely Fulfilled". In my firm...
Cross-Domain Alignment (IT Strategy to Business Infrastructure & Processes)	Thinking about the bridge between your higher-level, externally-focused <u>IT strategies</u> and your lower-level, internally-focused <i>business infrastructure and processes</i> (see red arrow in above figure), to what extent are the following functions fulfilled in your firm? We are trying to get a sense of whether your <i>business processes</i> help you execute and develop your <u>IT strategy</u> . For example, if your <i>internal business policies, procedures, personnel, and structure</i> strongly support your <u>IT mission and goals</u> , you would select "Entirely Fulfilled". In my firm...

<sup>34</sup> This figure is similar to that of Figure 3, with red arrows inserted and the alignment names removed.

<b>Table 33: Stems Included in the Essay 2 Full Study</b>	
<b>Construct</b>	<b>Stem</b>
IT Alignment	Thinking about the alignment between your higher-level, externally-focused <u>IT strategies</u> and your lower-level, internally-focused <i>IT infrastructure and processes</i> (see red arrow in above figure), to what extent are the following functions fulfilled in your firm? We are trying to get a sense of whether your <i>technical capabilities</i> help you execute and develop your <u>IT strategy</u> . For example, if your <i>IT policies, procedures, personnel, and systems</i> strongly support your <u>IT mission and goals</u> , you would select "Entirely Fulfilled". In my firm...
Business Alignment	Thinking about the alignment between your higher-level, externally-focused <u>business strategies</u> and your lower-level, internally-focused <i>business infrastructure and processes</i> (see red arrow in above figure), to what extent are the following functions fulfilled in your firm? We are trying to get a sense of whether your <i>business processes</i> help you execute and develop your <u>strategy for competing in the market</u> . For example, if your internal <i>business policies, procedures, personnel, and structure</i> strongly support your <u>business mission and goals</u> , you would select "Entirely Fulfilled". In my firm...
Alignment for Common Method Bias Test	Please indicate the extent to which you agree or disagree with each statement.
Financial Performance	For each of the statements below, how has your firm performed relative to your competition during the last 5 years:

### **Financial Performance**

Due to the previously established relationship between a firm's profitability and its resources (e.g. Wernerfelt 1984) and our findings in Essay 1, we chose to include financial performance as the dependent variable. Specifically, firms with higher levels of alignment may be able to achieve higher long-term profitability, availability of financial resources, and sales growth than firms with lower IT alignment (Cragg et al. 2002; Croteau and Raymond 2004). Additionally, the level of performance may shift depending on the alignment perspective the firm chooses (Henderson and Venkatraman 1993; 1999). As such, we included financial performance in our model to empirically test the relationships between the different types of alignment and financial performance.



## **Control Variables**

Many studies have indicated firm age, size, and type influence the alignment process (e.g. Chan et al. 2006; Cragg et al. 2002; Powell 1992). Regarding firm age, some research has shown age may have a negative impact on profitability (Powell 1992), while other research has demonstrated a positive relationship between alignment and financial performance for older but not younger firms (Randolph et al. 1991). Concerning firm size, empirical evidence shows large firms require more comprehensive and formal strategy-making processes and planning than smaller firms (Cragg et al. 2002; Powell 1992; Pyburn 1983). Furthermore, large firms tend to have more "slack" resources available to respond to changes in the environment, invest in new IT projects, and integrate technology into their business processes (Armstrong and Sambamurthy 1999; Chan et al. 2006). However, research suggests even small firms will pursue and achieve alignment (Cragg et al. 2002; Hussin et al. 2002). Finally, previous research indicates the type of firm (public versus private) may also influence the extent to which alignment impacts financial performance (Chan et al. 2006). Therefore, we include firm age, size, and type as control variables.

Similar to the control variables for firm demographics, we also added IT department size, IT spending, and IT department age as control variables. This is consistent with previous research involving CIOs (e.g. Karimi et al. 2000; Li et al. 2006b; Tiwana and Konsynski 2010). Regarding IT department size, the number of IT employees is a common concern among firms looking at alignment, particularly if they are trying to reduce the overhead in their IT budgets (e.g. Brown and Magill 1998; Porra et al. 2005; Tiwana and Konsynski 2010). However, large departments may have broader

access to technological knowledge, which could ease alignment with the business (Teo et al. 2003). Concerning IT spending, researchers have posited a direct relationship between IT spending and financial performance where alignment was a critical moderator of that relationship (e.g. Byrd et al. 2006). On the one hand, research has shown technology investments are equally available to all firms such that a direct relationship between IT spending and financial performance is not plausible (Carr 2003; Kearns and Lederer 2003; Oh and Pinsonneault 2007). On the other hand, alignment is potentially a way a firm realizes a return on IT spending (Avison et al. 2004; Huang and Hu 2007). Finally, previous research indicates IT department age may also influence the extent to which firms are able to pursue alignment (Li et al. 2006b; Teo et al. 2003). For example, legacy systems may be hard to replace due to switching costs or other resource constraints such that alignment becomes quite difficult (Li et al. 2006b). Hence, we include IT department size, IT spending, and IT department age as control variables in our model.

Table 34 summarizes the control variables considered in this study.

<b>Table 34: Control Variables for Essay 2</b>		
<b>Control Variable</b>	<b>Definition</b>	<b>References</b>
Firm Demographics	firm age (number of years since founded), firm size (measured in terms of employees and revenues), and firm type (public vs. private)	(Armstrong and Sambamurthy 1999; Chan et al. 2006; Cragg et al. 2002; Powell 1992)
IT Department Demographics	IT department size (the number of IT employees), IT spending (the % of revenue spent on IT), and IT department age (number of years since founded)	(Karimi et al. 2000; Li et al. 2006b; Teo et al. 2003)

## **SURVEY ADMINISTRATION**

After making additional changes based on the feedback we received from our second round of pre-testing, we administered the survey to the *Research Now* CIO panel.

We then analyzed the reliability and validity (including discriminant, convergent, and predictive validity) of the items, tested for mediation using Sobel's (1982) test, analyzed the control variables, and assessed the threat of common method bias. This process is described in detail in the following paragraphs.

### **Research Design**

The full study was administered through *Research Now*, a national market research firm. *Research Now* provides respondents who participate in various research studies (in this case, the most senior IT professional in the company such as the CIO, Director of IT, Vice President of IT, and Chief Technology Officer (Armstrong and Sambamurthy 1999; Banker et al. 2011; Grover et al. 1993; Preston and Karahanna 2009)). Their CIO panel is comprised of almost 2,500 members. This data collection approach is used in management research (Piccolo and Colquitt 2006; Porter and Donthu 2008) and MIS research (Kamis et al. 2008; Posey et al. 2010; Sun forthcoming).

*Research Now* uses closed recruitment to increase the confidence in the respondent validity. This means their panelists are only invited via partners and they do not collect respondents from websites or by allowing panelists to self-select into their panel. For example, CIOs are recruited from an invitation sent to the prospective panelist by a company they have done business with in the past (e.g. if a CIO was a US Airways Dividend Miles member, he might receive an invite from US Airways to participate in the panel). If he replies, *Research Now* asks about his work, title, etc. during the profiling process and then validates the company address to make sure it matches that of the United States Postal Service.

Additionally, they use traps in their initial profiling questionnaire, analysis, and recruiting methodology to ensure the prospective panelist is a CIO. For example, they employ traps and data check analysis to look for inconsistencies in responses (e.g. if a respondent indicates their household income is \$25,000 but then report they are a CIO in a company with 5,000 to 10,000 employees, they are flagged as invalid). *Research Now* reports that the profile of their member panel is representative of the U. S. population in regard to revenue and industry (see Tables 35-37 for panel specifics).

<b>Table 35: Research Now CIO Panel Revenue Distribution</b>		
Revenue	Available Members	% of total responses
\$11-\$50.99 million	447	24.7%
\$51-\$100.99 million	251	13.8%
\$101-\$499.99 million	357	19.7%
\$500 million - \$999 million	272	15.0%
\$1 billion - \$9.99 billion	297	16.4%
>\$10 billion	189	10.4%
<b>Total</b>	<b>1,813</b>	

<b>Table 36: Research Now CIO Panel Industry Distribution</b>		
Industry	Available Members	% of total responses
Aerospace & Defense	54	2.8%
Agriculture / Livestock	9	0.5%
Automotive	49	2.6%
Banking / Financial Services / Insurance	271	14.2%
Business Services	63	3.3%
Chemicals	18	0.9%
Computer Hardware	83	4.3%
Computer Services	68	3.6%
Computer Software	149	7.8%
Construction	51	2.7%
Consulting	92	4.8%
Consumer / Personal Services	28	1.5%
Consumer Products Manufacturing	29	1.5%
Education / Training	79	4.1%
Electronics - Manufacturing	20	1.0%

<b>Table 36: Research Now CIO Panel Industry Distribution</b>		
Industry	Available Members	% of total responses
Energy & Utilities	18	0.9%
Entertainment / Sports	23	1.2%
Environmental Services & Equipment	4	0.2%
Food / Beverages / Restaurants	26	1.4%
Government (Federal/State/Local)	107	5.6%
Health Care / Medical	171	8.9%
Industrial Manufacturing	39	2.0%
Legal Services	21	1.1%
Machinery/Equipment	20	1.0%
Manufacturing	25	1.3%
Market Research	2	0.1%
Media / Publishing	40	2.1%
Metals & Mining	6	0.3%
Not-For-Profit	3	0.2%
Paper Products	2	0.1%
Petroleum/Petrochemicals	10	0.5%
Pharmaceuticals	12	0.6%
Real Estate	24	1.3%
Retail	38	2.0%
Security Products & Services	5	0.3%
Telecommunications Equipment	9	0.5%
Telecommunications Services	47	2.5%
Textiles/Apparel	6	0.3%
Transport / Transportation Services / Logistics	50	2.6%
Travel / Hospitality / Leisure	13	0.7%
Trucking/Warehousing	12	0.6%
Utilities	11	0.6%
Wholesaling	2	0.1%
None of the Above	103	5.4%
<b>Total</b>	<b>1,912</b>	

<b>Table 37: Research Now CIO Panel Regional Distribution</b>	
Region	Available Members
Midwest	449
Northeast	458
South	641
West	445
<b>Total</b>	<b>1,993</b>

CIO respondents for *Research Now* have double opted into the panel to participate in surveys. Double opt-in implies that panelists accept the invitation from *Research Now* and are then given an opportunity to withdraw from the panel, ensuring that they really do want to participate. Panelists are provided with credit to their e-Rewards account for each survey they complete. This is similar to the incentives often given to complete an instrument in traditional mail surveys where mailings are made to a directory (sample frame) of participants.

Although *Research Now* profiles its panel of respondents, thereby enabling us to target CIOs, the profile may be outdated. For instance, a respondent may have a new job title or may be employed by a different company at the time of completing this survey than when he was first invited to join the respondent panel. Therefore, we used a screening question, at the beginning of the survey, to gain better control over our sample frame: Are you currently the head of your IT department (in other words, a CIO, VP of IT, or Director of IT)? This question, as well as the demographic collection at the end of the survey, allows us to target the appropriate sampling frame.

The survey was sent to 1,077 CIOs in the *Research Now* CIO panel. Of these, 218 panelists clicked on the e-mail to the survey link page. Eighteen respondents chose not to enter the survey. Additionally, the screening question eliminated 36 respondents. A total of 140 questionnaires were completed, resulting in a response rate of 13 percent. While this response rate is low, this is traditional for research conducted on CIOs where response rates are typically between 7 and 20% (Oh and Pinsonneault 2007; Preston et al.

2006) (e.g. 12% for Chen et al. 2010a; 9.4% and 15.2% for Preston et al. 2006). The demographic statistics for the respondents are illustrated in Table 38.

<b>Table 38: Demographic Statistics for Essay 2 (n=140)</b>				
<b>Characteristic</b>		<b>Frequency</b>		
Gender	Male	112		
	Female	20		
	Unreported	8		
College Education	Average = 5.42 years			
Experience		Industry	CIO	IT
	<1 year	3	4	1
	1-5 years	35	45	6
	6-10 years	37	48	18
	11-15 years	35	21	32
	16+ years	27	18	80
Status	Direct Report to CEO	79		
	One Level to CEO	51		
	2+ Levels to CEO	10		
Title	CIO	64		
	CTO	18		
	Director of IT	21		
	VP of IT	16		
	Other	21		
Age	Average = 45.16			
Firm Type	Public	41		
	Private	88		
Firm Size (revenue in \$millions)	<100	31		
	101-500	30		
	501-1000	24		
	>1000	29		
Industry	Manufacturing	45		
	Service	47		
	Other	48		

### **Reliability, Convergent Validity, and Discriminant Validity Analyses**

Upon collecting measures for all the constructs, we verified the unidimensionality of the six types of alignment by running a confirmatory factor analysis and checking the mean, skewness, kurtosis, loadings, and breadth of the constructs (Noar 2003). Like the

pilot test, we used SmartPLS 2.0 (Ringle et al. 2005) to run this analysis. Table 39 shows satisfactory factor analysis results.

<b>Table 39: Confirmatory Factor Analysis Results for the Essay 2 Full Study</b>								
	ACMB	BA	CABS2ITO	CAITS2BSO	IA	ITA	OA	PERF
ACMB1	<b>0.64</b>	0.08	0.16	0.21	0.14	0.20	0.15	0.06
ACMB2	<b>0.79</b>	0.20	0.33	0.32	0.24	0.25	0.32	0.21
ACMB3	<b>0.86</b>	0.31	0.21	0.14	0.08	0.04	0.17	0.36
ACMB4	<b>0.61</b>	0.11	0.10	0.16	0.16	0.15	0.11	0.10
BA1	0.32	<b>0.89</b>	0.52	0.50	0.37	0.48	0.50	0.52
BA2	0.36	<b>0.73</b>	0.39	0.39	0.23	0.35	0.33	0.40
BA3	0.15	<b>0.82</b>	0.45	0.42	0.34	0.42	0.44	0.46
BA4	0.26	<b>0.80</b>	0.44	0.41	0.31	0.42	0.40	0.32
BA5	0.14	<b>0.79</b>	0.41	0.38	0.24	0.38	0.39	0.35
BA6	0.20	<b>0.85</b>	0.46	0.43	0.34	0.40	0.48	0.49
CABS2ITO1	0.25	0.46	<b>0.82</b>	0.70	0.56	0.60	0.66	0.26
CABS2ITO2	0.19	0.40	<b>0.80</b>	0.63	0.44	0.56	0.64	0.27
CABS2ITO3	0.25	0.52	<b>0.86</b>	0.68	0.52	0.65	0.75	0.40
CABS2ITO4	0.26	0.46	<b>0.81</b>	0.65	0.50	0.51	0.67	0.33
CABS2ITO5	0.22	0.44	<b>0.85</b>	0.68	0.48	0.61	0.78	0.28
CABS2ITO6	0.25	0.43	<b>0.85</b>	0.70	0.48	0.57	0.75	0.34
CAITS2BSO1	0.23	0.37	0.66	<b>0.83</b>	0.55	0.64	0.73	0.26
CAITS2BSO2	0.16	0.38	0.61	<b>0.79</b>	0.46	0.63	0.66	0.15
CAITS2BSO3	0.28	0.48	0.67	<b>0.83</b>	0.60	0.60	0.70	0.34
CAITS2BSO4	0.17	0.39	0.67	<b>0.80</b>	0.53	0.63	0.70	0.27
CAITS2BSO5	0.14	0.42	0.71	<b>0.83</b>	0.49	0.70	0.73	0.18
CAITS2BSO6	0.21	0.50	0.68	<b>0.87</b>	0.52	0.60	0.71	0.34
IA1	0.17	0.34	0.52	0.54	<b>0.82</b>	0.44	0.51	0.19
IA2	0.22	0.44	0.60	0.58	<b>0.85</b>	0.51	0.59	0.32
IA3	0.08	0.16	0.38	0.42	<b>0.72</b>	0.35	0.43	0.14
IA4	0.17	0.25	0.43	0.47	<b>0.84</b>	0.39	0.49	0.25
IA5	0.10	0.27	0.41	0.49	<b>0.73</b>	0.37	0.41	0.21
IA6	0.09	0.19	0.43	0.49	<b>0.72</b>	0.36	0.44	0.08
IA7	0.11	0.23	0.37	0.49	<b>0.77</b>	0.39	0.46	0.19
IA8	0.11	0.35	0.55	0.56	<b>0.82</b>	0.49	0.57	0.23
ITA1	0.08	0.42	0.51	0.60	0.40	<b>0.84</b>	0.60	0.18
ITA2	0.15	0.44	0.64	0.65	0.48	<b>0.85</b>	0.66	0.21
ITA3	0.12	0.44	0.56	0.61	0.41	<b>0.82</b>	0.58	0.19
ITA4	0.15	0.46	0.59	0.62	0.50	<b>0.83</b>	0.66	0.20
ITA5	0.19	0.40	0.64	0.66	0.47	<b>0.86</b>	0.72	0.14
ITA6	0.13	0.33	0.58	0.66	0.43	<b>0.81</b>	0.64	0.15
OA1	0.20	0.41	0.67	0.72	0.50	0.66	<b>0.81</b>	0.21
OA2	0.20	0.40	0.59	0.64	0.42	0.61	<b>0.73</b>	0.18
OA3	0.21	0.50	0.70	0.68	0.55	0.58	<b>0.82</b>	0.33
OA4	0.27	0.34	0.66	0.69	0.51	0.62	<b>0.78</b>	0.20



	ACMB	BA	CABS2ITO	CAITS2BSO	IA	ITA	OA	PERF
OA5	0.25	0.40	0.76	0.69	0.47	0.60	<b>0.84</b>	0.29
OA6	0.14	0.48	0.75	0.74	0.60	0.71	<b>0.87</b>	0.25
PERF1	0.24	0.51	0.38	0.32	0.24	0.23	0.33	<b>0.87</b>
PERF2	0.28	0.40	0.29	0.28	0.18	0.19	0.26	<b>0.85</b>
PERF3	0.27	0.39	0.31	0.26	0.21	0.25	0.23	<b>0.82</b>
PERF4	0.25	0.43	0.27	0.22	0.20	0.05	0.19	<b>0.80</b>
PERF5	0.14	0.38	0.26	0.19	0.20	0.14	0.22	<b>0.70</b>
PERF6	0.32	0.47	0.33	0.28	0.22	0.12	0.29	<b>0.87</b>
PERF7	0.32	0.44	0.32	0.29	0.29	0.22	0.24	<b>0.80</b>
PERF8	0.27	0.38	0.30	0.31	0.27	0.22	0.26	<b>0.73</b>

IA = Intellectual Alignment; OA = Operational Alignment; CABS = Cross-Domain Alignment (Business Strategy & IT Infrastructure and Processes); CAIT = Cross-Domain Alignment (IT Strategy & Business Infrastructure and Processes); BA = Business Alignment; ITA = IT Alignment; ACMB = Alignment for Common Method Bias Test; PERF = Financial Performance

While coefficient alpha (i.e. Cronbach's alpha) is one of many ways to perform a reliability analysis (Cronbach and Shavelson 2004), it is standard in most reliability discussions and is considered ideal over 0.8 or 0.9 (Nunnally 1978). We also looked for any severe nonnormality issues (skewness > 2, kurtosis > 7)<sup>35</sup> (Fabrigar et al. 1999). Table 40 reveals satisfactory alpha levels<sup>36</sup> and no nonnormality problems except for the alignment for common method bias test construct. Hence, we believe the distributions of the alignment types and of financial performance are appropriate for the statistical tests used in this study.

Construct	Reliability (alpha)	Mean	St. Dev	Skewness (error)	Kurtosis (error)
Intellectual Alignment (IA)	0.91	31.29	4.97	-1.61 (0.21)	6.27 (0.41)
Operational Alignment (OA)	0.90	23.56	3.50	-0.54 (0.21)	1.63 (0.41)

<sup>35</sup> We used SPSS 15.0 for Windows Grad Pack (LEADTOOLS 2006) for this analysis.

<sup>36</sup> The formula for alpha is  $(k/(k-1))/(1-\sum s_i^2/s_t^2)$  (Cronbach and Shavelson 2004). As such, alpha is influenced by the number of items as well as the standard deviation (Cronbach and Shavelson 2004).

<b>Table 40: Reliability and Normality Test Results for the Essay 2 Full Study</b>					
<b>Construct</b>	<b>Reliability (alpha)</b>	<b>Mean</b>	<b>St. Dev</b>	<b>Skewness (error)</b>	<b>Kurtosis (error)</b>
Cross-Domain Alignment – Business Strategy to IT Infrastructure & Processes (CABS2ITO)	0.91	23.47	3.72	-0.53 (0.21)	1.30 (0.41)
Cross-Domain Alignment – IT Strategy to Business Infrastructure & Processes (CAITS2BSO)	0.91	23.48	3.59	-0.48 (0.21)	1.09 (0.41)
Business Alignment (BA)	0.90	23.11	4.96	-0.99 (0.21)	2.60 (0.41)
IT Alignment (ITA)	0.91	23.99	3.84	-0.74 (0.21)	1.57 (0.41)
Alignment for Common Method Bias Test (ACMB)	0.78	14.78	3.70	-2.27 (0.21)	7.21 (0.41)
Financial Performance (PERF)	0.92	29.21	7.34	-1.26 (0.21)	2.98 (0.41)

Then, we conducted an analysis to investigate convergent and discriminant validity for the constructs. For convergent validity, we evaluated the loading of each item onto their specified factor (Chin and Frye 1996). First, we compared the coefficients for the indicators with the standard errors, where the loadings should be at least twice as much as the standard error (Anderson and Gerbing 1988). Second, a t-statistic of 1.65 or higher suggests the item loading is significant at 0.05 (n=140). All the loadings are significant as illustrated in Table 41.

<b>Table 41: Convergent Validity Test for the Essay 2 Full Study</b>					
<b>Item</b>	<b>t-value (STERR)</b>	<b>Item</b>	<b>t-value (STERR)</b>	<b>Item</b>	<b>t-value (STERR)</b>
CABS2ITO1	21.17 (0.04)	IA1	7.40 (0.11)	BA1	29.56 (0.03)
CABS2ITO2	18.46 (0.04)	IA2	8.38 (0.10)	BA2	9.18 (0.08)
CABS2ITO3	34.36 (0.03)	IA3	4.51 (0.16)	BA3	13.97 (0.06)
CABS2ITO4	18.08 (0.04)	IA4	7.15 (0.12)	BA4	12.49 (0.06)
CABS2ITO5	22.86 (0.04)	IA5	7.11 (0.10)	BA5	10.11 (0.08)
CABS2ITO6	24.30 (0.03)	IA6	4.37 (0.16)	BA6	25.01 (0.03)

<b>Table 41: Convergent Validity Test for the Essay 2 Full Study</b>					
CAITS2BSO1	19.76 (0.04)	IA7	6.35 (0.12)	ITA1	12.97 (0.06)
CAITS2BSO2	14.42 (0.05)	IA8	7.18 (0.11)	ITA2	15.74 (0.05)
CAITS2BSO3	25.67 (0.03)	OA1	16.51 (0.05)	ITA3	10.54 (0.08)
CAITS2BSO4	18.92 (0.04)	OA2	10.18 (0.07)	ITA4	11.14 (0.07)
CAITS2BSO5	20.71 (0.04)	OA3	25.27 (0.03)	ITA5	13.89 (0.06)
CAITS2BSO6	29.93 (0.03)	OA4	13.34 (0.06)	ITA6	10.60 (0.08)
ACMB1	2.09 (0.31)	OA5	26.19 (0.03)	PERF1	26.12 (0.03)
ACMB2	3.78 (0.21)	OA6	30.12 (0.03)	PERF2	21.82 (0.04)
ACMB3	4.73 (0.18)			PERF3	16.66 (0.05)
ACMB4	2.01 (0.30)			PERF4	12.71 (0.06)
				PERF5	9.99 (0.07)
				PERF6	36.83 (0.02)
				PERF7	15.31 (0.05)
				PERF8	11.21 (0.06)
All significant at 0.05; m STERR = Standard Error					
IA = Intellectual Alignment; OA = Operational Alignment; CABS2ITO = Cross-Domain Alignment (Business Strategy to IT Infrastructure & Processes); CAITS2BO = Cross-Domain Alignment (IT Strategy to Business Infrastructure & Processes); BA = Business Alignment; ITA = IT Alignment; ACMB = Alignment for Common Method Bias Test; PERF = Financial Performance					

Following the evaluation of convergent validity, we evaluated discriminant validity. To do so, we entered all first-order factors in a correlation matrix. To assess discriminant validity, we compared cross factor correlations against the square root of the average variance extracted of each factor (Chin and Frye 1996). If the cross factor correlation exceeds the square root of the average variance extracted, there may be a lack of discriminant validity. The correlation matrixes illustrated in Tables 42 and 43 indicate there are some high cross factor correlations between cross-domain alignment and operational alignment, suggesting there may be discriminant validity issues between these two constructs. However, our q-sorts and pre-tests indicated cross-domain alignment was conceptually distinct from the other types of alignment. Additionally, our factor analysis, reliability calculations, and item-level discriminant validity tests all had satisfactory results. Therefore, we concluded these high construct correlations were not

particularly problematic for the purposes of this study. In summary, the construct correlation matrix indicated there might be problems between some of the factors; however, the factor analysis, reliability tests, and discriminant and convergent validity analyses did not indicate any problems with the different types of alignment or with financial performance.

### **Predictive Validity Analyses**

Predictive validity, subsumed in construct validity, ensures our conclusions are the way they should be (Straub 1989). We tested the predictive validity of the different types of alignment based on Henderson and Venkatraman's (1993; 1999) discussion of the four dominant alignment perspectives: strategy execution, technology transformation, competitive potential, and service level. The strategy execution perspective indicates financial performance is driven by business and operational alignment. The technology transformation perspective specifies financial performance is driven by intellectual and IT alignment. The competitive potential perspective involves the impact of intellectual and business alignment on financial performance. Finally, the service level perspective suggests IT and operational alignment drive financial performance. The results are illustrated in Figures 13-16.

**Table 42: Discriminant Validity Analysis for the Essay 2 Full Study**

	IA1	IA2	IA3	IA4	IA5	IA6	IA7	IA8	OA1	OA2	OA3	OA4	OA5	OA6	CABS 1	CABS 2	CABS 3	CABS 4	CABS 5	CABS 6
IA1	<b>.78</b>																			
IA2	.72	<b>.78</b>																		
IA3	.57	.48	<b>.78</b>																	
IA4	.63	.60	.65	<b>.78</b>																
IA5	.53	.52	.40	.57	<b>.78</b>															
IA6	.51	.50	.60	.59	.56	<b>.78</b>														
IA7	.59	.54	.47	.61	.56	.56	<b>.78</b>													
IA8	.58	.68	.57	.63	.49	.57	.56	<b>.78</b>												
OA1	.54	.50	.29	.38	.32	.33	.34	.36	<b>.81</b>											
OA2	.39	.38	.29	.34	.28	.35	.30	.33	.65	<b>.81</b>										
OA3	.39	.44	.41	.46	.36	.34	.47	.51	.55	.51	<b>.81</b>									
OA4	.38	.45	.44	.40	.33	.38	.34	.50	.57	.48	.55	<b>.81</b>								
OA5	.35	.52	.28	.34	.30	.32	.26	.46	.61	.50	.55	.66	<b>.81</b>							
OA6	.47	.58	.37	.45	.40	.43	.46	.55	.64	.55	.67	.61	.71	<b>.81</b>						
CBS1	.59	.55	.36	.38	.38	.40	.32	.50	.65	.50	.50	.48	.53	.59	<b>.83</b>					
CBS2	.36	.46	.29	.30	.31	.42	.23	.41	.52	.57	.43	.49	.57	.56	.64	<b>.83</b>				
CBS3	.39	.57	.29	.37	.39	.32	.36	.46	.58	.51	.68	.55	.66	.62	.62	.64	<b>.83</b>			
CBS4	.40	.45	.27	.36	.41	.35	.35	.46	.45	.40	.62	.57	.57	.59	.63	.57	.60	<b>.83</b>		
CBS5	.41	.47	.25	.34	.33	.34	.35	.44	.64	.48	.64	.56	.74	.70	.65	.56	.73	.63	<b>.83</b>	
CBS6	.45	.47	.40	.37	.23	.35	.22	.47	.55	.50	.57	.61	.72	.68	.63	.65	.63	.59	.70	<b>.83</b>
CAIT	.53	.50	.40	.46	.39	.42	.36	.42	.73	.63	.49	.63	.58	.57	.64	.56	.51	.50	.51	.58
CAIT	.39	.44	.38	.32	.22	.44	.32	.42	.58	.59	.45	.62	.54	.52	.53	.62	.44	.47	.51	.53
CAIT	.47	.55	.31	.43	.57	.38	.49	.45	.61	.46	.63	.54	.52	.63	.55	.47	.66	.55	.60	.50
CAIT	.46	.42	.37	.42	.34	.40	.45	.46	.62	.49	.54	.62	.54	.61	.57	.48	.58	.53	.57	.58
CAIT	.45	.46	.30	.29	.36	.45	.30	.50	.60	.51	.55	.57	.66	.68	.64	.54	.57	.55	.63	.63
CAIT	.38	.48	.35	.36	.39	.39	.41	.50	.48	.54	.62	.52	.62	.64	.56	.54	.53	.58	.55	.65
ITA1	.40	.41	.29	.26	.22	.25	.26	.37	.62	.57	.43	.46	.42	.52	.50	.49	.43	.37	.38	.43
ITA2	.42	.45	.32	.32	.37	.29	.35	.43	.61	.51	.53	.52	.47	.61	.53	.54	.63	.43	.51	.52
ITA3	.25	.43	.24	.32	.26	.33	.27	.43	.44	.42	.43	.47	.50	.56	.49	.49	.52	.43	.47	.41
ITA4	.42	.44	.33	.35	.36	.36	.39	.46	.51	.48	.51	.60	.52	.61	.48	.40	.58	.47	.58	.43
ITA5	.38	.40	.27	.42	.33	.28	.42	.38	.61	.55	.56	.57	.59	.63	.50	.44	.62	.45	.65	.54
ITA6	.34	.43	.31	.31	.28	.26	.29	.39	.52	.53	.43	.51	.54	.61	.50	.46	.47	.41	.50	.56

**Diagonals = square-root AVE; Off-Diagonal = Correlations; IA = Intellectual Alignment; OA = Operational Alignment; CABS = Cross-Domain Alignment (Business Strategy & IT Infrastructure and Processes); CAIT = Cross-Domain Alignment (IT Strategy & Business Infrastructure and Processes); BA = Business Alignment; ITA = IT Alignment; ACMB = Alignment for Common Method Bias Test; PERF = Financial Performance**

Table 42 (cont): Discriminant Validity Analysis for the Essay 2 Full Study													
	CAIT	CAIT	CAIT	CAIT	CAIT	CAIT	CAIT	ITA1	ITA2	ITA3	ITA4	ITA5	ITA6
CAIT	<b>.82</b>												
CAIT	.75	<b>.82</b>											
CAIT	.58	.55	<b>.82</b>										
CAIT	.57	.57	.58	<b>.82</b>									
CAIT	.66	.64	.55	.68	<b>.82</b>								
CAIT	.62	.60	.69	.57	.69	<b>.82</b>							
ITA1	.58	.55	.46	.48	.54	.45	<b>.84</b>						
ITA2	.52	.47	.57	.61	.53	.51	.69	<b>.84</b>					
ITA3	.47	.56	.45	.50	.60	.50	.66	.59	<b>.84</b>				
ITA4	.49	.52	.51	.54	.58	.49	.56	.63	.63	<b>.84</b>			
ITA5	.56	.51	.55	.55	.58	.52	.60	.69	.62	.75	<b>.84</b>		
ITA6	.60	.56	.49	.46	.69	.56	.71	.57	.58	.57	.73	<b>.84</b>	

Table 42 (cont): Discriminant Validity Analysis for the Essay 2 Full Study																	
	IA1	IA2	IA3	IA4	IA5	IA6	IA7	IA8	OA1	OA2	OA3	OA4	OA5	OA6	CABS1	CABS2	CABS3
BA1	.36	.44	.20	.27	.20	.18	.20	.36	.43	.42	.47	.38	.36	.38	.48	.38	.50
BA2	.16	.31	.04	.13	.15	.07	.13	.26	.26	.28	.29	.26	.24	.28	.37	.35	.36
BA3	.29	.37	.14	.20	.23	.19	.24	.38	.33	.28	.44	.24	.33	.45	.41	.39	.41
BA4	.36	.39	.08	.16	.24	.16	.21	.22	.37	.27	.33	.27	.31	.38	.40	.32	.44
BA5	.25	.28	.13	.16	.27	.10	.08	.15	.28	.30	.34	.22	.34	.39	.28	.24	.38
BA6	.26	.36	.16	.24	.25	.21	.23	.30	.31	.37	.50	.28	.35	.47	.31	.25	.45
ACMB1	.20	.12	.18	.14	.03	.14	.01	.11	.18	.15	.05	.27	.07	.07	.21	.15	.10
ACMB2	.25	.25	.22	.20	.16	.20	.12	.14	.28	.33	.22	.30	.28	.20	.30	.27	.29
ACMB3	.04	.14	-.04	.08	.06	-.02	.07	.04	.08	.06	.18	.16	.22	.09	.16	.10	.19
ACMB4	.19	.16	.06	.19	.00	.11	.14	.13	.18	.17	.06	.17	.01	.04	.13	.06	.12
PERF1	.18	.24	.18	.20	.22	.04	.12	.19	.19	.19	.34	.24	.31	.24	.24	.27	.37
PERF2	.05	.24	.06	.18	.17	-.01	.11	.12	.19	.11	.27	.18	.26	.18	.20	.16	.33
PERF3	.16	.26	.09	.18	.14	.07	.15	.13	.23	.17	.16	.15	.22	.18	.25	.23	.33
PERF4	.12	.27	.03	.11	.12	.06	.17	.20	.05	.06	.27	.09	.19	.18	.17	.19	.24
PERF5	.16	.20	.12	.20	.06	.05	.14	.22	.17	.13	.26	.12	.19	.14	.18	.16	.25
PERF6	.10	.33	.13	.19	.18	.03	.11	.16	.20	.11	.31	.19	.28	.25	.19	.26	.36
PERF7	.23	.25	.11	.28	.27	.08	.24	.24	.18	.17	.25	.15	.20	.21	.25	.24	.36
PERF8	.25	.25	.15	.24	.16	.18	.17	.23	.19	.21	.26	.14	.20	.22	.22	.21	.29

**Diagonals = square-root AVE; Off-Diagonal = Correlations; IA = Intellectual Alignment; OA = Operational Alignment; CABS = Cross-Domain Alignment (Business Strategy & IT Infrastructure and Processes); CAIT = Cross-Domain Alignment (IT Strategy & Business Infrastructure and Processes); BA = Business Alignment; ITA = IT Alignment; ACMB = Alignment for Common Method Bias Test; PERF = Financial Performance**

<b>Table 42 (cont): Discriminant Validity Analysis for the Essay 2 Full Study</b>															
	CABS	CABS	CABS	CAIT	CAIT	CAIT	CAIT	CAIT	CAIT	ITA1	ITA2	ITA3	ITA4	ITA5	ITA6
BA1	.43	.40	.39	.46	.43	.42	.36	.38	.44	.42	.41	.41	.44	.39	.33
BA2	.34	.26	.25	.34	.30	.30	.31	.28	.40	.26	.32	.36	.28	.25	.22
BA3	.39	.30	.32	.25	.30	.41	.33	.36	.38	.44	.36	.44	.33	.24	.25
BA4	.37	.31	.34	.25	.27	.39	.37	.36	.34	.28	.38	.40	.42	.35	.24
BA5	.31	.35	.43	.21	.22	.39	.28	.32	.40	.34	.38	.26	.35	.32	.26
BA6	.38	.49	.36	.26	.27	.46	.28	.36	.43	.27	.32	.29	.44	.39	.30
ACMB1	.09	.06	.21	.21	.17	.21	.19	.17	.08	.18	.21	.12	.14	.15	.21
ACMB2	.29	.21	.28	.34	.29	.34	.17	.21	.22	.18	.22	.17	.24	.25	.21
ACMB3	.22	.19	.17	.10	.02	.16	.10	.05	.18	-.04	.01	.07	.04	.10	.03
ACMB4	.01	.09	.09	.13	.18	.20	.18	.06	.04	.08	.21	.02	.17	.15	.09
PERF1	.33	.25	.36	.23	.14	.30	.28	.15	.34	.18	.27	.20	.22	.14	.09
PERF2	.23	.24	.26	.21	.13	.30	.21	.13	.30	.16	.18	.19	.15	.10	.16
PERF3	.24	.23	.25	.24	.15	.21	.26	.18	.21	.22	.22	.25	.19	.16	.19
PERF4	.31	.19	.25	.13	.09	.23	.15	.11	.28	.01	.06	.06	.08	-.02	.05
PERF5	.18	.25	.24	.13	.09	.20	.12	.15	.21	.17	.08	.11	.15	.09	.12
PERF6	.27	.19	.34	.26	.12	.32	.14	.09	.31	.10	.13	.11	.08	.08	.13
PERF7	.27	.24	.22	.22	.07	.31	.31	.18	.24	.15	.21	.18	.24	.19	.08
PERF8	.27	.21	.27	.24	.15	.30	.25	.20	.31	.17	.24	.13	.20	.17	.14

**Diagonals = square-root AVE;** Off-Diagonal = Correlations; IA = Intellectual Alignment; OA = Operational Alignment; CABS = Cross-Domain Alignment (Business Strategy & IT Infrastructure and Processes); CAIT = Cross-Domain Alignment (IT Strategy & Business Infrastructure and Processes); BA = Business Alignment; ITA = IT Alignment; ACMB = Alignment for Common Method Bias Test; PERF = Financial Performance

<b>Table 42 (cont): Discriminant Validity Analysis for the Essay 2 Full Study</b>																		
	BA1	BA2	BA3	BA4	BA5	BA6	ACMB 1	ACMB 2	ACM B3	ACMB 4	PERF 1	PERF 2	PERF 3	PERF 4	PERF 5	PERF 6	PERF 7	
BA1	<b>0.81</b>																	
BA2	0.69	<b>0.81</b>																
BA3	0.63	0.46	<b>0.81</b>															
BA4	0.60	0.55	0.68	<b>0.81</b>														
BA5	0.58	0.38	0.65	0.62	<b>0.81</b>													
BA6	0.74	0.48	0.58	0.57	0.70	<b>0.81</b>												
ACM B1	0.07	0.14	0.05	0.17	0.04	-0.03	<b>0.73</b>											
ACM B2	0.24	0.24	0.09	0.23	0.09	0.09	0.62	<b>0.73</b>										
ACM B3	0.31	0.36	0.18	0.21	0.17	0.25	0.30	0.41	<b>0.73</b>									
ACM B4	0.14	0.15	0.00	0.18	-0.02	0.08	0.73	0.60	0.23	<b>0.73</b>								
PERF1	0.50	0.38	0.44	0.32	0.39	0.43	-0.03	0.14	0.30	0.04	<b>0.81</b>							
PERF2	0.39	0.34	0.34	0.21	0.28	0.36	0.00	0.17	0.33	0.04	0.69	<b>0.81</b>						
PERF3	0.42	0.35	0.30	0.26	0.21	0.32	0.07	0.20	0.27	0.11	0.69	0.74	<b>0.81</b>					
PERF4	0.43	0.28	0.36	0.26	0.25	0.43	0.04	0.08	0.31	0.07	0.64	0.58	0.54	<b>0.81</b>				
PERF5	0.33	0.25	0.36	0.20	0.26	0.39	0.02	0.13	0.12	0.08	0.49	0.67	0.52	0.50	<b>0.81</b>			
PERF6	0.45	0.43	0.38	0.27	0.31	0.40	0.02	0.22	0.38	0.01	0.75	0.79	0.64	0.65	0.57	<b>0.81</b>		
PERF7	0.43	0.31	0.40	0.28	0.30	0.40	0.06	0.18	0.35	0.13	0.72	0.53	0.63	0.60	0.43	0.62	<b>0.81</b>	
PERF8	0.36	0.22	0.35	0.27	0.23	0.39	0.19	0.21	0.23	0.17	0.53	0.50	0.55	0.60	0.46	0.53	0.57	<b>0.81</b>

**Diagonals = square-root AVE; Off-Diagonal = Correlations**  
 IA = Intellectual Alignment; OA = Operational Alignment; CABS = Cross-Domain Alignment (Business Strategy & IT Infrastructure and Processes); CAIT = Cross-Domain Alignment (IT Strategy & Business Infrastructure and Processes); BA = Business Alignment; ITA = IT Alignment; ACMB = Alignment for Common Method Bias Test; PERF = Financial Performance



<b>Table 43: Construct Correlation Matrix for the Essay 2 Fully Study</b>								
	ACMB	BA	CABS2ITO	CAITS2BSO	IA	ITA	OA	PERF
ACMB	<b>0.78</b>							
BA	0.27	<b>0.80</b>						
CABS2ITO	0.29	0.54	<b>0.83</b>					
CAITS2BSO	0.29	0.51	0.81	<b>0.82</b>				
IA	0.22	0.36	0.60	0.64	<b>0.79</b>			
ITA	0.22	0.49	0.71	0.77	0.53	<b>0.84</b>		
OA	0.29	0.49	0.84	0.86	0.62	0.78	<b>0.81</b>	
PERF	0.26	0.51	0.38	0.32	0.27	0.22	0.29	<b>0.81</b>
<p><b>Diagonals = square-root AVE; Off-Diagonals = Correlations</b>            IA = Intellectual Alignment; OA = Operational Alignment; CABS = Cross-Domain Alignment (Business Strategy &amp; IT Infrastructure and Processes); CAIT = Cross-Domain Alignment (IT Strategy &amp; Business Infrastructure and Processes); BA = Business Alignment; ITA = IT Alignment; ACMB = Alignment for Common Method Bias Test; PERF = Financial Performance</p> <p>Cross-factor correlations that exceed the AVE (potential lack of discriminant validity)</p>								

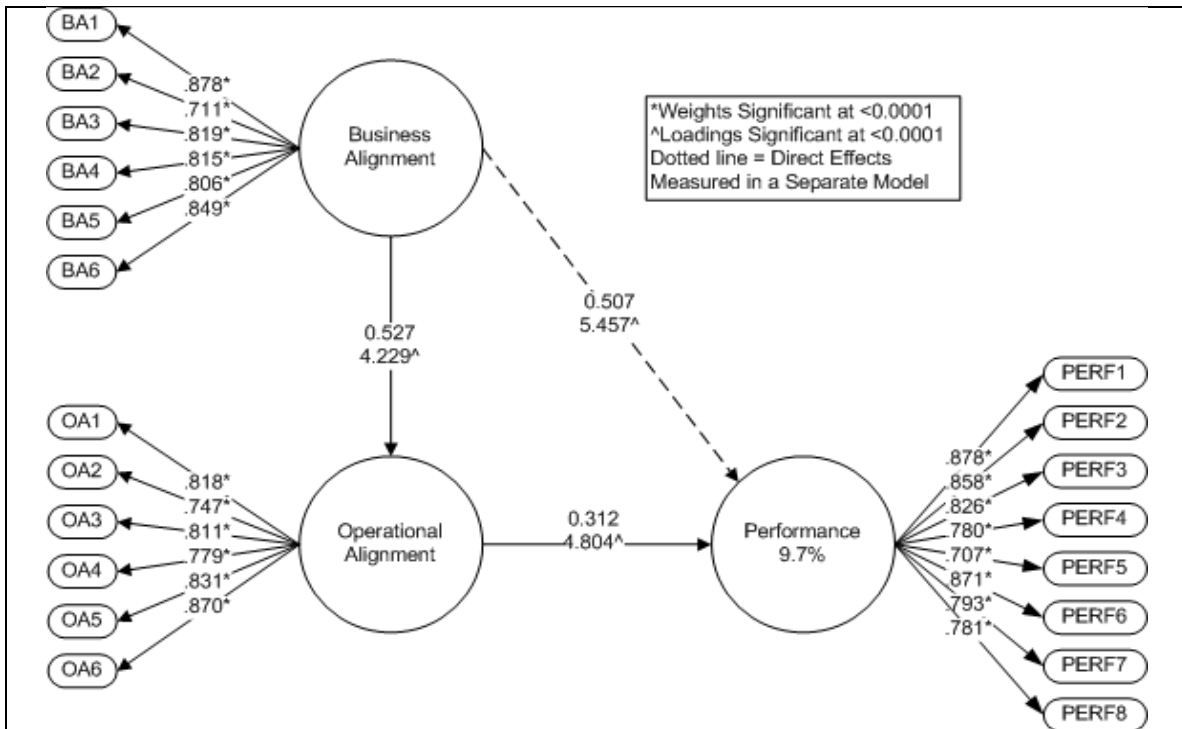


Figure 13: Predictive Validity Results – Strategy Execution Alignment Perspective

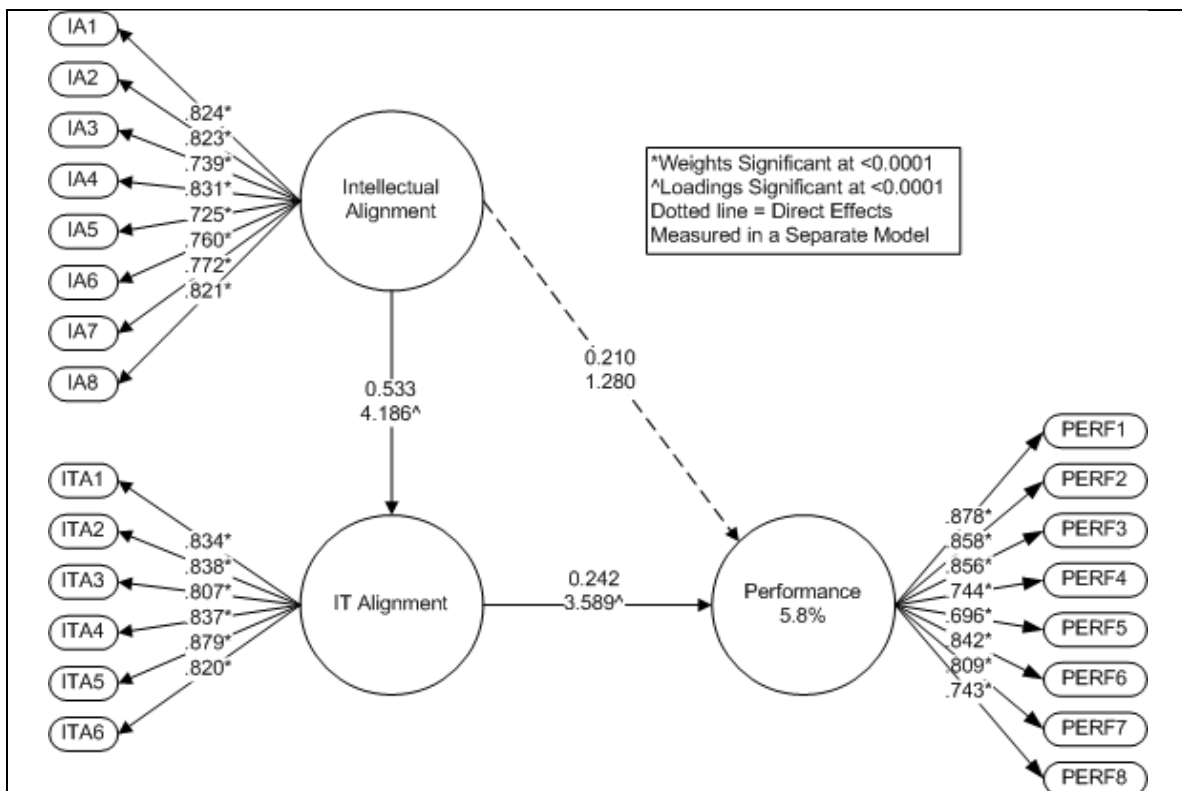
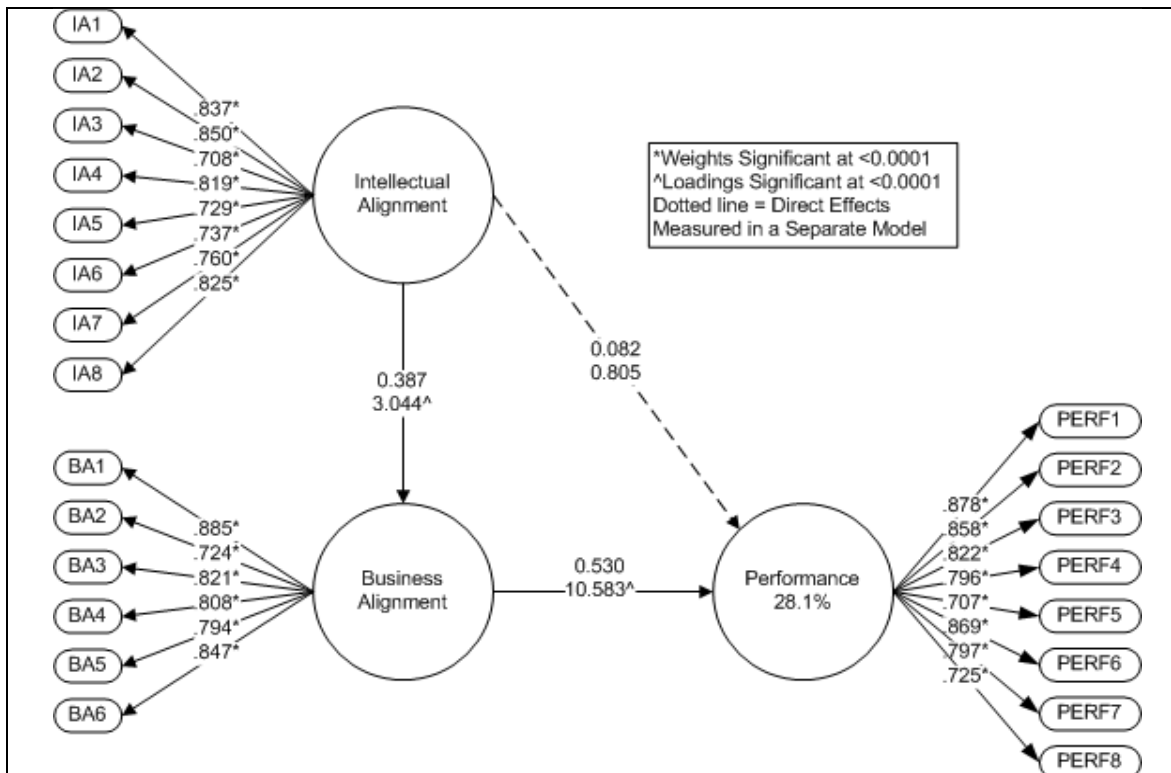
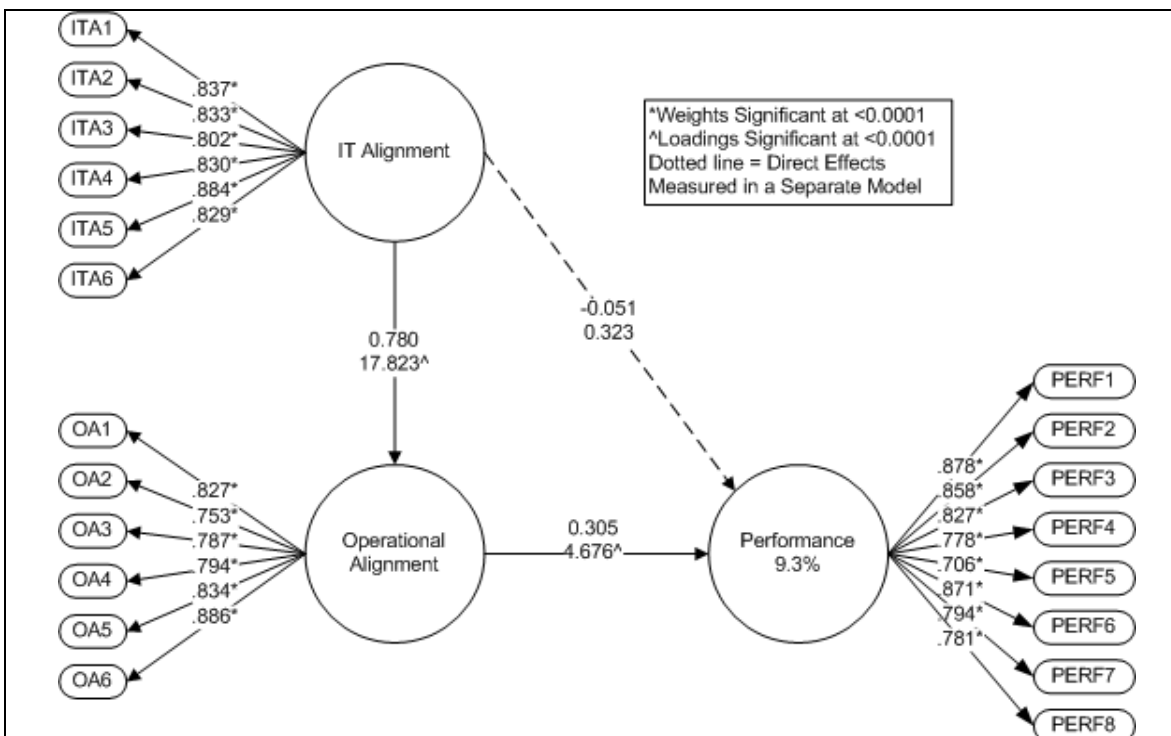


Figure 14: Predictive Validity Results – Technology Transformation Alignment Perspective



**Figure 15: Predictive Validity Results – Competitive Potential Alignment Perspective**



**Figure 16: Predictive Validity Results – Service Level Alignment Perspective**

### Sobel Test for Mediation

Before testing mediation, the direct effects from the independent variables to the dependent variables must be significant. This initial condition was met for all relationships as illustrated in Figures 13-16. To test for the mediation of the different types of alignment, we calculated Sobel’s (1982) test for mediation using the formula shown in equation (1) where a = beta coefficient of the independent variable to the mediator variable, b = beta coefficient of the mediator variable to the dependent variables, and s = standard error of the beta coefficient. The results shown in Table 44 indicate business, intellectual, and IT alignment do have mediation effects through operational, IT, and business alignment in their given models. Therefore, we conclude business alignment has an indirect effect on financial performance through operational alignment in the strategy execution alignment perspective, intellectual alignment has an indirect effect on financial performance through IT and business alignment in the technology transformation and competitive potential alignment perspectives, respectively, and IT alignment has an indirect effect on financial performance through operational alignment in the service level alignment perspective.

$$z\text{-value} = (a*b) / \sqrt{(b^2*s_a^2 + a^2*s_b^2)} \quad (1)$$

<b>Table 44: Sobel Test for Essay 2</b>						
<b>Relationship (System Type)</b>	<b>z-value</b>	<b>p-value</b>	<b>a</b>	<b>b</b>	<b>s<sub>a</sub></b>	<b>s<sub>b</sub></b>
BA → OA → Financial Performance	3.27	<0.001	0.53	0.31	0.12	0.07
IA → ITA → Financial Performance	2.91	0.01	0.53	0.24	0.13	0.06
IA → BA → Financial Performance	2.90	0.01	0.39	0.53	0.13	0.05
ITA → OA → Financial Performance	4.56	<0.001	0.78	0.31	0.04	0.06
a = beta coefficient of the independent variable to the mediator variable; b = beta coefficient of the mediator variable to the dependent variable; s = standard error of the beta coefficient; BA = Business Alignment, OA = Operational Alignment, IA = Intellectual Alignment, ITA = IT Alignment						

## Control Variable Results

We analyzed the influence of the control variables on our models by adding the 7 variables<sup>37</sup> to each of the four alignment perspective models. This resulted in significant relationships for firm size (revenue) and firm type as shown in Table 45. This suggests these two variables will explain some of the variance in financial performance, in addition to the variance explained by the different types of alignment.

**Table 45: Control Variable Results for Essay 2**

Model (Alignment Perspective)	Beta Coefficient						
	Firm Age	Firm Size (Employees)	Firm Size (Revenue)	Firm Type	IT Age	IT Spending	IT Size
Strategy Execution	-0.11	-0.03	0.19*	0.22*	0.09	0.10	-0.01
Technology Transformation	-0.11	-0.01	0.20*	0.23*	0.09	0.13	-0.05
Competitive Potential	-0.04	-0.06	0.26*	0.16*	0.09	0.07	-0.09
Service Level	-0.11	-0.03	0.19*	0.22*	0.09	0.10	-0.02

\*significant at 0.05

## Assessment of Common Method Bias Threat

Like all behavioral research studies, common method bias threatens the validity of our study (Podsakoff et al. 2003). Following the techniques described by Podsakoff et al. (2003), we tried to control for common method bias through the design of our study's procedures and through statistical controls, which are explained in Appendix M.

Procedural remedies help control common method bias by identifying the connection between the measures of the predictor and dependent variables and then

<sup>37</sup> firm age (number of years since the founding of the firm), firm size (measured by both number of employees and revenue with dummy codings of <300 = 1, 300-1000 = 2, 1001-5000 = 3, 5001-25,000 = 4, >25,000 = 5 for employees and <20 = 1, 20-50 = 2, 51-100 = 3, 101-500 = 4, 501-1000 = 5, and >1000 = 6 for revenue), firm type (dummy variable where other = 0, public = 1, and private = 2), IT age (number of years since the founding of the IT department), IT spending (dummy variable where 0-1% = 1, 1-2.5% = 2, 2.6-5% = 3, 5.1-10% = 4, 10.1-15% = 5, 15.1-20% = 6, 20.1-25% = 7, >25% = 8), and IT size (dummy variable where <10 = 1, 10-50 = 2, 51-100 = 3, 101-500 = 4, 501-1000 = 5, 1001-5000 = 6, >5000 = 7)

eliminating or minimizing these common characteristics by carefully designing the study (Podsakoff et al. 2003). We employed two procedural remedies to try to control the influence of common method bias: psychological separation of measurement and protecting respondent anonymity/reducing evaluation apprehension.

We used two methods of psychological separation of measurement to make it appear our measurement of the alignment (predictor) variables was not connected with or related to the measurement of the performance (criterion or dependent) variable (Podsakoff et al. 2003). First, our cover letter (which was the first page of the survey) referred to the impact of the respondent on the strategic and technical decisions of the firm without any reference to the corresponding performance of the firm. This "cover story" was designed to ensure respondents did not try to mentally connect alignment and performance. Second, we also physically separated the measures with questions from another study. These questions were unrelated to the alignment and performance concepts and were inserted between the alignment and performance measures as an additional way of providing a psychological disconnect between the predictor and dependent variables.

Our second procedural remedy is protecting the anonymity of the respondents and reducing evaluation apprehension. By using a third party to administer the survey, we never had access to the respondents' names or company names. Instead, each respondent had a computer-generated response ID that the third party used to track the individuals who completed the survey. The research team only had access to these computer-generated response IDs and not the names of the individuals associated with these IDs. The research team provided the third party with the list of response IDs but did not

transmit the responses. Therefore, the respondent names and responses were never electronically associated. We also added a clause in our cover letter that assured the respondent that no answers would be linked to them by anybody on the research team; this was added as a means of assuring the respondents that they could answer the questions honestly.

## **LIMITATIONS**

Before recommending this instrument to alignment researchers, we acknowledge a few points of caution should be discussed. While the various items were developed with very broad terminology (i.e. strategies, infrastructures, processes), the stems were designed to target specific concepts (e.g. business strategy = business competing in the market, business infrastructure and processes = internal business policies, procedures, personnel, and structure). In other words, we followed a cognitive processing approach to developing our items.

While domain-sampling is the more common approach to item creation because it emphasizes parsimony while maintaining validity and high reliability, alignment is a broad construct that has not been clearly defined in the literature or in practice. This may be attributed to the context specific nature of alignment. For example, alignment in a manufacturing industry may be focused more on operational excellence or cost objectives while the healthcare industry may focus more on collaborative innovation or service differentiation<sup>38</sup>. Due to the many different aspects of alignment and the manifestation of such context specificity, domain-sampling would have resulted in a very large number of different items (i.e. reliability would be lower) and may not have adequately captured

---

<sup>38</sup> <http://www.cisco.com/web/strategy/index.html> (Accessed October 8, 2011 at 8:15 am)

industry-specific differences. As such, we chose the cognitive processing approach since it is more general than domain-sampling and involves more extensive stems that provide examples from practice as well as detailed definitions of the constructs.

While the cognitive sampling approach insures the respondent is interpreting the items in the way the researcher intends, it also requires more extensive reading by the respondent and is susceptible to a social desirability bias. Despite these drawbacks, we concluded cognitive processing was more appropriate than domain-sampling due to the validity issues we encountered during the pilot study. We also believe our items can be easily reworded by substituting particular strategic or process concepts if a researcher chooses to pursue a domain-sampling approach rather than the cognitive processing approach. In this case, we recommend future researchers run additional analyses on the validity and reliability of the items after rewording the items.

Second, we only surveyed CIOs. Studies often cite their use of single respondents as problematic due to common source bias (e.g. Armstrong and Sambamurthy 1999; Jarvenpaa and Ives 1993; Kearns and Sabherwal 2006; Lai et al. 2009). Although this concern can be addressed by using multiple respondents in the same firm (Teo and King 1996), collecting data from two sources at the executive level is quite difficult (Chan et al. 1997) and could compromise the anonymity of the questionnaire (Kearns and Sabherwal 2006; Podsakoff et al. 2003). Additionally, subjectivity and measurement error are still a possibility even for matched pairs (Tallon 2007b). While previous research indicates surveying matched pairs of CIOs and CEOs is superior to surveying single respondents because the researcher can capture both sides of the dyad and mitigate



some of the common method bias issues (Bassellier and Benbasat 2004; Croteau and Raymond 2004; Kearns and Sabherwal 2006), our first essay found single respondents were acceptable when measuring the relationship between alignment and performance.

## **ALIGNMENT RESULTS**

This investigation of the 6 different types of alignment and their measurement offers several contributions. First, the most apparent contribution is the establishment of an overall instrument to measure the various types of alignment. The instrument development process included surveying known existing instruments, adapting appropriate items, creating new items as necessary, and then undertaking an extensive scale development process based on the procedures employed by Moore and Benbasat (1991) and described by MacKenzie (2011). This process has been shown to provide a high degree of confidence in the content and construct validity of the given scales (MacKenzie et al. 2011; Moore and Benbasat 1991). The result of this study is a 38-item instrument to measure 6 types of alignment, all with acceptable levels of reliability. In this study, we examined how the different alignment types influence financial performance. For future research, we recommend looking at other dimensions of firm performance such as productivity or customer benefit since different industries or firms often have different performance goals (e.g. manufacturers may be more interested in productivity whereas retailers may consider customer benefits more important). Additionally, it may be useful to consider one large model that considers all 6 types of alignment and their relationships with all 3 dimensions of firm performance.

The item development process also helped to clarify and refine some of the definitions of the various types of alignment. The development steps showed the existing

definitions of alignment made it hard to conceptually distinguish between the different types such that it was confusing to determine what was and was not included in the definition of each type of alignment. As a result, we expanded the definitions to specify the level of analysis. For example, we created more precise definitions that established intellectual alignment as "the higher-level, externally focused, STRATEGIC level of alignment" as opposed to "the lower-level, internally focused, OPERATIONAL level" for operational alignment. We also ensured each definition clearly specified the components that were being aligned. For example, business alignment includes the alignment of business strategy and business infrastructure/processes. Therefore, our definition makes reference to both of these boxes in that "the higher-level, externally focused business strategies [i.e. the business strategy component] are aligned with the lower-level, internally focused business infrastructure and processes [i.e. the business infrastructure/processes component]". These changes highlight the focus of each type of alignment such that one can clearly determine which components of alignment are under consideration. By creating comprehensive definitions that clearly specify the components of each type of alignment, future researchers will be able to utilize items that clearly cover the domain of interest, can test the adequacy of each alignment measure, have a strong foundation on which to build future alignment research, and can compare results across studies since they can be confident they are examining the same construct. Specifically, we recommend future researchers consider the context of their study and then pick the type of alignment that is most suited to that situation. For example, operational alignment may be more important in manufacturing firms while IT alignment

may be more critical in technology firms. Since we found firm type was a significant control variable in our models, it may be interesting to compare the strength of the alignment-performance relationship based on specific industries or performance goals.

Additionally, alignment researchers have indicated the impact of alignment on financial performance should be addressed (Barua et al. 2004; Tallon 2003). In this study, we found the competitive potential alignment perspective (comprised of intellectual and business alignment) explains 28.1 percent of the variance in financial performance. This suggests the alignment of business and IT strategies followed by the alignment of the business strategies and infrastructure/processes may be important for enhancing financial performance. To a lesser extent, the strategy execution alignment perspective (i.e. business and operational alignment) and the service level alignment perspective (i.e. IT and operational alignment) explain 9.7 and 9.3 percent of the variance in financial performance, respectively. This indicates the alignment of business and IT infrastructures/processes can follow either business alignment (where the business strategies and business infrastructures/processes are aligned with each other) or IT alignment (where the IT strategies and IT infrastructures/processes are aligned with each other), with the similar effects on financial performance. Finally, the technology transformation alignment perspective (comprised of intellectual and IT alignment) explains only 5.8 percent of the variance in financial performance. This supports existing research that asserts IT has a lesser impact on the financial performance of the firm (Cooper et al. 2000; Roepke et al. 2000). In summary, our results show that while IT is important in the overall process (e.g. IT should align with the business), it is not by itself

critical to the financial success of the firm. Only by clearly specifying the domain of each type of alignment can researchers compare the relationships between the different types of alignment and performance more precisely. Specifically, future researchers should try to determine the reasons behind the relationship differences between the cross-domain alignment perspectives and financial performance. For example, researchers may need to engage in longitudinal research to determine the sequence of alignment processes that need to occur to generate certain levels of financial performance (e.g. IT strategy should be aligned with business strategy before the firm engages in alignment of the IT infrastructures and processes). In turn, this will help researchers provide straightforward directions to practitioners for each type of alignment.

Finally, the scales for cross-domain alignment were developed, but they confounded with the other types of alignment in the pilot study and in the full study. While the sorting exercises and pre-tests indicated cross-domain alignment was conceptually distinct from the other types of alignment, and while its scale has good reliability, the factor analysis (Promax with Kaiser Normalization) grouped cross-domain alignment with intellectual and operational alignment in the pilot study and operational and IT alignment in the full study. Furthermore, analysis of the correlation tables indicates cross-domain alignment had potential discriminant validity issues with intellectual and operational alignment in the pilot study and with operational alignment in the full study. This indicates additional work is needed on the cross-domain alignment construct to investigate its relationship with the other types of alignment. It is possible cross-domain alignment is a higher order construct that represents the overall alignment

perspectives proposed by Henderson and Venkatraman (1993; 1999) such that respondents conceptually understand the difference between cross-domain alignment and intellectual/operational alignment but do not rate them differently based on the activities in their firms. In other words, firms only pursue operational alignment to accommodate changes in their strategies, such that cross-domain alignment must occur for operational alignment success (Henderson and Venkatraman 1993). Alternatively, this could indicate the two different types of cross-domain alignment are, in fact, different constructs. It could also suggest operational alignment may be viewed differently in the context of different cross-domain matching. Future researchers should consider potential alternatives to measuring cross-domain alignment to explore these possibilities, particularly when they are also examining operational alignment.

## **CONCLUSION**

In this essay, our motivation was to facilitate the development of a cumulative research tradition in the alignment literature. Therefore, we had a two-fold objective. First, we clearly defined the different types of alignment and created a robust alignment framework by building upon Henderson and Venkatraman's Strategic Alignment Model (1993; 1999). Specifically, we created consistent definitions for six different types of alignment by clearly specifying the level of analysis (i.e. strategic versus operational) and by capturing the content of the components being aligned (i.e. strategy versus infrastructure and processes). This is particularly important to ensure we are adequately defining alignment such that we can clearly differentiate it from other constructs and alleviate any confusion about what is or is not included in the construct definition.

Second, we statistically tested operational measures of the different types of alignment to create a rigorous measure of the different alignment types. Specifically, we created a 38-item instrument (8 items for intellectual alignment and 6 items for each of the other alignment types) that gives future researchers a useful tool for studying the different types of alignment and their relationship with other constructs such as financial performance. Using these scales, future alignment researchers will be able to measure alignment in a variety of contexts such that they can draw conclusions that are more consistent with other research and will assist in providing clearer direction for practitioners.

## **ESSAY 3: Do CIOs Have What It Takes to Influence the Executive Team's Commitment to IT Initiatives?**

### **ESSAY 3 - ABSTRACT**

Despite the central role of information technology (IT) in contemporary firms, many Chief Information Officers (CIOs) still lack the influence over their executive teams that is enjoyed by other executives that report to the CEO. In this study, we apply the Power-Dependence Perspective (Emerson 1962) and the Political Perspective (Eisenhardt and Zbaracki 1992) to explain the relationship between power, political skill, and the CIO's influence over the executive team's commitment to strategic and technical IT initiatives. We use Multivariate General Linear Modeling to empirically examine these relationships using data collected from 127 CIOs. The results suggest structural power (i.e. the CIO's formal position in the firm), expert power (i.e. the CIO's business and technical knowledge), and prestige power (i.e. the important connections the CIO has established) relate to the CIO's influence over the executive team's commitment to IT initiatives. We also found political skill moderates the relationship between the CIO's power and influence over the executive team's commitment to IT initiatives. We discuss the implications of these results for research and practice.

**Key Words:** Chief Information Officer (CIO), power, political skill, influence, IT decision-making

# **Do CIOs Have What It Takes to Influence the Executive Team's Commitment to IT Initiatives?**

## **INTRODUCTION**

In the early 1980s, companies recognized information resources were a vital corporate asset that needed to be managed by high-ranking individuals (i.e. the Chief Information Officer or CIO) (Synnott and Gruber 1981). The adoption of the CIO title was originally "fadlike" because most companies didn't know how to exploit the CIO role (Brown et al. 1988 pp. 25). Over time, many companies accepted the central role of Information Technology (IT) in business strategy and process (Applegate and Elam 1992; Jarvenpaa and Ives 1991; Raghunathan and Raghunathan 1989) and acknowledged CIOs could offer vision for the joint development of business and IT strategies (Banker et al. 2011; King and Teo 1997).

Despite the CIO position's strategic potential, many CIOs struggle with eliciting the commitment they need from the executive team so they can apply the firm's IT resources in such a way that both supports and is supported by business initiatives (Carter et al. 2011; Synnott and Gruber 1981). This is particularly problematic because strategic decisions are often unstructured and ambiguous in nature such that power-seeking behavior is frequently demonstrated by individuals on the executive team (Preston et al. 2008). To make this power-balance even more complicated, IT resources are restricted due to lower IT budgets and uncertainty is often associated with IT solutions and payoffs (Chen et al. 2010b).



In an attempt to have a greater effect on their executive teams' commitment to IT initiatives, some CIOs have started to evaluate how they can leverage their position in the hierarchy, what knowledge they should possess, the social network they have developed, and their political abilities (Medcof 2008). Regarding their hierarchical position, CIOs who report directly to their CEOs and are active members of their executive teams may have the greatest impact on the joint development of business and IT strategies (Byrd et al. 2006; Feeny et al. 1992; Peppard 2010). However, it may be better for the CIO to report to another c-level executive (e.g. CFO, COO) to bridge the gap between IT and those business functions (Banker et al. 2011; Broadbent 2004). Second, CIOs may need to be more than technology experts because they may also need to understand how IT can drive business change and, more specifically, be able to express how the company can benefit from the use of IT in business language (Applegate and Elam 1992; Feeny et al. 1992; Kaarst-Brown 2005). Third, CIOs with strong social networks may be able to establish lines of communication that allow them to fully understand the business (Bassellier et al. 2003; Chatterjee et al. 2001; Li et al. 2006b; Preston et al. 2008). Alternatively, these relationships may have little or no effect if the CIO is viewed as a newcomer who is unequal to other high-level executives or if the CIO's ideas conflict with those of the business (Enns et al. 2007 p32; Kaarst-Brown 2005; Law and Ngai 2007). Finally, CIOs may need political savvy to build support for their ideas and effectively convince their colleagues about the merits of IT (Enns et al. 2011; Ferris et al. 2007). This means the CIO's reporting structure, competence, and a solid social network

may not be sufficient for him to understand and mobilize the interests of the executive team, particularly in a highly political business environment (Van de Ven 2005).

Prior research proposes hierarchical position, knowledge, connections, and political abilities may be useful to CIOs for guiding the executive team's commitment to IT initiatives and calls for an empirical examination of these relationships (Enns et al. 2003a; Jaspersen et al. 2002; Medcof 2008). Some researchers have empirically examined these various CIO attributes as antecedents of the CIO's decision-making authority (e.g. Preston et al. 2008), the CIO's leadership ability (e.g. Chen et al. 2010b; Smaltz et al. 2006), and the shared understanding between the CIO and executive team (e.g. Preston and Karahanna 2009; Preston et al. 2006). Although the extant literature addresses the IT decisions the CIO makes on behalf of the executive team, it does not account for IT decisions made by the executive team (i.e. the CIO only consults on the decision) (Bunderson 2003). This study is designed to facilitate an understanding of the attributes that allow CIOs to play a more central role in executive team's commitment to IT decision-making. Thus, we focus on the following research question:

*What are attributes of CIOs who successfully build executive team commitment to IT initiatives?*

To address this research question, we draw on two streams of literature to develop an integrative model of the CIO's ability to guide the executive team's commitment to IT initiatives. First, we employ the Power-Dependence Perspective (Emerson 1962) to explain the relationship between the CIO's power attributes and influence on the executive team's commitment to strategic IT choices, where *power is defined as the given authority people possess based on their roles in the firm, the unique knowledge they*

*acquire about the business and the field, and the legitimacy they obtain through a distinguished reputation* (Emerson 1962; Finkelstein 1992) and *influence is defined as a CIO's ability to convince other top managers to support IT initiatives without the use of force* (Enns et al. 2003b; Jaspersen et al. 2002). Second, we apply the Political Perspective (Eisenhardt and Zbaracki 1992) to explain how CIOs can use their political abilities to positively moderate the relationship between the CIO's power attributes and influence over the executive team's commitment to IT initiatives.

The remainder of this essay is organized as follows. In the next section, we conduct a short review of the literature on the Power-Dependence and Political Perspectives. Then, we present our research model of how power and political skill affect the CIO's influence on the executive team's commitment to IT initiatives. Six relationships are hypothesized between power and executive team commitment to IT initiatives. Additionally, we propose political skill as a moderator of these relationships. The research method and results section describes our data collection process, measures, and sample; we also present our empirical analysis and results for the full study. We conclude with a discussion including key findings, implications for theory and practice, limitations, and suggestions for future research.

## **THEORETICAL PERSPECTIVES**

### **Power-Dependence Perspective**

The importance of power within organizations is widely recognized and has received significant attention in research (Emerson 1962; Jaspersen et al. 2002). In particular, power is central to understanding the social relationships shared among executive team members, where the distribution of power is determined by the ties of

mutual dependence the members share (Emerson 1962; Finkelstein 1992). For example, in organizations where the CEO is not the dominant power-holder, other members of the executive team may be able to shape organizational outcomes (Finkelstein 1992; Mintzberg 1983). As such, the CEO may become dependent upon other executive team members if the CEO pursues goals that must be facilitated by choices or actions of the executive team (Emerson 1962). This implies one or more of the executive team members are in a position to deny the goals of the CEO and, in turn, have a certain level of power over the CEO because he is dependent upon them (Emerson 1962). Since the analysis of power revolves around the dependency of the CEO (i.e. actor A) on one or more executive team members (i.e. actor B), the Power-Dependence Perspective proposes: "The dependence of actor A upon actor B is (1) directly proportional to A's *motivational investment* in goals mediated by B, and (2) inversely proportional to the *availability* of those goals to A outside of the A-B relation" (Emerson 1962 p32).

Since the CIO's introduction to the executive team more than two decades ago, the study of power has also prevailed in the IS literature (Jasperson et al. 2002)<sup>39</sup>. For example, the CEO may recognize technology has a critical role in the firm's strategic initiatives (Lee 1991; Medcof 2008). This may cause the CEO (and the executive team) to become dependent upon the CIO's IT resources such that the CIO will have power over the executive team (Emerson 1962). Specifically, the executive team may need the CIO if the CIO is the technology expert and the executive team cannot solve particular IT problems by itself (Lee 1991; Medcof 2008). Additionally, the executive team may find

---

<sup>39</sup> This conceptualization of power is also referred to as the pluralist perspective (Jasperson et al. 2002).

IT decisions are highly complex and ambiguous; in such cases, the team may try to absorb uncertainty by relying on a CIO who plays an active role in external and internal executive team communications since the CIO may be privy to information and resources that are otherwise unavailable to the team (Finkelstein 1992; Lee 1991). Finally, the CIO may be the only individual in the position to mobilize the firm's IT resources such that the executive team is dependent upon the CIO role (Medcof 2008).

Taken together, this suggests the CIO's power over the executive team is based upon the dependence of the executive team on the CIO, where this dependence is directly proportional to the executive team's motivational investment in (i.e. need of) the CIO and inversely proportional to the availability of the CIO's attributes from other sources (Emerson 1962; Medcof 2008). This means an executive team is dependent on a CIO if it needs what the CIO offers and can't get these resources from another source. In particular, a CIO's competence (i.e. expert power) and connections (i.e. prestige power) may be unique to the executive team such that the team will give IT a more central role in the company (i.e. motivational investment component). Additionally, the CIO may be able to increase the executive team's dependence upon him if the CIO is the only source readily available on the team (i.e. structural power and the availability component) (Bunderson 2003; Emerson 1962; Finkelstein 1992; Ibarra 1993).

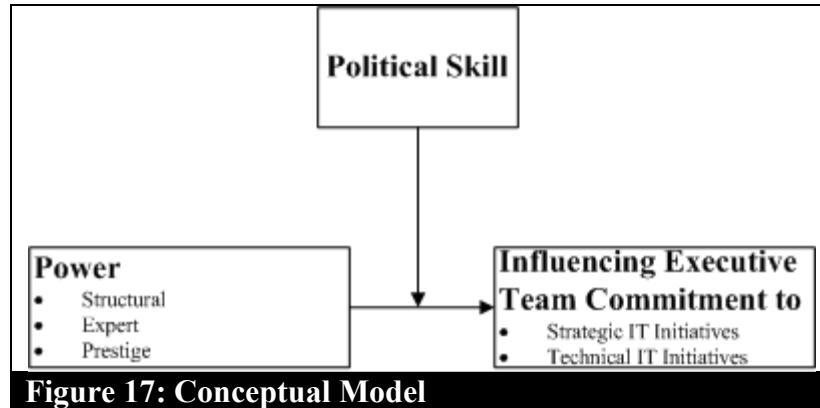
### **Political Perspective**

While the Power-Dependence Perspective addresses the dependent nature of actor A on actor B such that actor B will have a certain level of power over actor A, it does not specifically address changes in power resulting from political activities within the firm. In particular, political behavior is often necessary because collections of people have

conflicting (or at least partially conflicting) goals (Eisenhardt and Zbaracki 1992; Pfeffer 1981). As such, some executive team actions may be a consequence of reconciling individual interests through political behavior rather than exerting power over another's dependency (e.g. Boonstra and Bennebroek Gravenhorst 1998; Jasperson et al. 2002).

While individuals are rational due to the common goals they share with others, conflicting goals create a collective irrationality (Eisenhardt and Zbaracki 1992; Yukl 2002). For example, everyone on the executive team may be interested in the welfare of the firm; however, the CIO may want IT to play a more active role in the strategic direction of the firm. To resolve the potentially competing interests between the CIO and the executive team, decisions follow the desires and choices of the most powerful people (Eisenhardt and Zbaracki 1992; March 1962; Salancik and Pfeffer 1974). To change the power structure and promote their own goals, CIOs may need to engage in political activity (Eisenhardt and Zbaracki 1992; March 1962; Pfeffer 1981). For example, a CIO may need to make a concerted effort to understand the viewpoints of the executive team members and then negotiate with, influence, and persuade them to see things the CIO's way (Niederman et al. 1991; Smaltz et al. 2006; Van de Ven 2005). Otherwise, the CIO's ability to influence change in the business may be limited, particularly in a highly political business environment (Chowa 2010; Enns et al. 2011; Peppard 2010). Taken together, this suggests a CIO's power may not be enough to influence the executive team's commitment to IT initiatives; instead, the CIO may also need to employ political skill to positively moderate the relationship between the CIO's power and influence over the executive team.

Figure 17 presents the conceptual model of the study, which indicates the CIO's power profile including structural, expert, and prestige power can be used to influence executive team commitment to strategic and technical IT initiatives, where political skill moderates this relationship.



**Figure 17: Conceptual Model**

## **A MODEL OF CIO INFLUENCE ON EXECUTIVE TEAM COMMITMENT**

Many researchers have discussed how power can be used to influence the behavior of others (Jasperson et al. 2002), particularly regarding decision-making (Bendahan et al. 2005; Chen et al. 2010b; Finkelstein 1992). For example, some researchers define power by the role it plays in influencing strategic decisions made at the top level of management (Finkelstein 1992; Preston et al. 2008). Others define power by the impact it has on critical decisions regarding technical decisions (e.g. IT solutions) (Bendahan et al. 2005). Still others define power by how it can be used to influence both strategic (demand-side) and technical (supply-side) decision-making (Chen et al. 2010b). Since we want to capture both strategic and technical IT decision-making, we adopt this last approach. We posit CIOs who can provide critical and hard-to-obtain resources (e.g. by using their hierarchical authority, business and technical knowledge, and important

contacts) will be able to influence their peers' commitment to strategic and technical IT initiatives (Emerson 1962; Pfeffer and Salancik 1978). In the following sections, we describe these hypotheses in detail.

*Influence over executive team commitment to technical IT initiatives is the degree to which the CIO effectively convinces executive team members to follow the CIO's advice such that the CIO affects the decisions made about the firm's IT architecture, IT investments, IT infrastructure, application development, and IT outsourcing.* Many organizations consider IT as a critical resource that must be embedded in their strategies and processes (Byrd and Turner 2001; Carr 2003; Porter and Millar 1985). As such, the goals of IT have evolved from simply improving operational efficiency of the business to also identifying strategic opportunities where IT can help enhance the firm's competitive advantage (Chen et al. 2010b; Weiss et al. 2006). This suggests the role of the CIO is two-fold. First, the CIO must ensure the firm's IT competencies are used to their full potential by influencing traditional, technical decisions about the IT architecture, IT investments, IT infrastructure, application development, and IT outsourcing (Broadbent et al. 1999b; Chen et al. 2010b; Weill and Ross 2005).

*Influence over executive team commitment to strategic IT initiatives is the degree to which the CIO effectively convinces executive team members about the strategic potential of IT such that the CIO affects the firm's strategic IT decisions.* For companies seeking to make IT more central to their strategies and processes, another CIO role is the responsibility for decisions that enable IT's support of business opportunities leading to competitive advantage (Chen et al. 2010b). Specifically, CIOs need to develop and



communicate a vision for IT that brings value to the entire organization by supporting and enhancing the firm's strategy (Applegate and Elam 1992). Any IT initiatives they advocate must be designed to play a critical role in the strategic direction of the firm (e.g. Enns et al. 2001; 2003a; Lederer and Mendelow 1988). If the CIO can convince the executive team that IT has strategic value and can gain the executive team's commitment, compliance, and endorsement (Earl and Feeny 1994; Lederer and Mendelow 1988), the executive team will be more likely to share and support the CIO's vision (Earl and Feeny 1994; Enns et al. 2003a; 2003b) and ensure the CIO's intended requests, proposals, and decisions will be carried out (Enns et al. 2003b; Markham 1998; Yukl et al. 2008).

### **Power and Influence Outcomes**

As discussed earlier, the CIO needs to develop and use power bases such as formal position, competence, and connections to influence the executive team (Bunderson 2003; Emerson 1962; Finkelstein 1992; Ibarra 1993). Specifically, this includes three types of power: structural, expert, and prestige (Finkelstein 1992)<sup>40</sup>.

#### **Structural Power**

*Structural power is the "CIO's level of legitimate power due to his or her formal position within the hierarchy of the organization"* (Chen et al. 2010b p245). In this case, the focus is on power residing in the position rather than the person (Astley and Sachdeva 1984; Brass and Burkhardt 1993; Greve and Mitsuhashi 2007). If a CIO has structural power, it would mean the CIO is in a position to be heard by the executive team (Chen et al. 2010b; Medcof 2007; Welbourne and Trevor 2000), has access to the information and personnel resources necessary to carry out the executive team's strategic IT initiatives

---

<sup>40</sup> Finkelstein (1992) addresses four types of power for top executives. We do not include ownership power in this essay since it is more relevant to CEOs and smaller, privately held companies (Preston et al. 2008).

(Astley and Sachdeva 1984; Lambert et al. 1993; Lee 1991; Lines 2007; Pettigrew 1973), and is given the authority to influence subordinates (French and Raven 1959; Yukl and Falbe 1991).

Dependence between the executive team and CIO may occur when other departments need IT resources only the CIO can provide (e.g. operations or finance may need help purchasing hardware such as PCs or may need training on effectively using software); this is the availability component from Emerson's Power-Dependence Perspective (Enns et al. 2003b; Jaspersen et al. 2002; Medcof 2008; Yukl and Falbe 1991). Since the executive team may be more dependent upon the CIO to provide IT resources, we expect the relationship between structural power and influence over strategic and technical IT initiatives will be positive and posit:

*H1a: CIOs with higher levels of structural power will report a greater influence over executive team commitment to strategic IT initiatives.*

*H1b: CIOs with higher levels of structural power will report a greater influence over executive team commitment to technical IT initiatives.*

### **Expert Power**

*Expert power is the ability of CIOs to deal with strategic contingencies of the firm through the development of their technical and business knowledge* (Finkelstein 1992; French and Raven 1959; Medcof 2008). Technical knowledge refers to the CIO's understanding of technology. With this knowledge, CIOs may be able to promote the appropriate use of technology throughout the firm (Applegate and Elam 1992; Rockart et al. 1982). Technical knowledge is particularly important because many executive teams have a lack of technical knowledge (Preston and Karahanna 2009). Business knowledge refers to the gathering of information about how the business functions (Applegate and

Elam 1992; McNulty et al. 2011; Preston and Karahanna 2009). In particular, a CIO who possesses knowledge about the business is more likely to understand the business priorities, opportunities, and needs for strategically using IT; in turn, the CIO can communicate the strategic importance of IT to the executive team (Applegate and Elam 1992; Smaltz et al. 2006).

If the CIO can speak in a language the executive team understands (business knowledge), the team may be more likely to directly access the technical knowledge of the CIO. In turn, the CIO may be able to help the team envision how IT can facilitate business goals and strategies so the team can make more informed IT decisions (Armstrong and Sambamurthy 1999; Lederer and Mendelow 1988; Preston and Karahanna 2009). As a result, the executive team may be more dependent upon the CIO's technical and business knowledge since the CIO is more well-suited to advising the executive team about IT issues; this is the motivational investment component from Emerson's Power-Dependence Perspective (Medcof 2008). Since the executive team may be more dependent on CIOs who have both business and technical knowledge, we expect the CIO will have greater influence over the executive team's commitment to IT initiatives (Armstrong and Sambamurthy 1999; Lee 1991; Medcof 2008; Rockart et al. 1982; Wakefield 2005). Hence, we propose:

*H2a: CIOs with higher levels of expert power will report a greater influence over executive team commitment to strategic IT initiatives.*

*H2b: CIOs with higher levels of expert power will report a greater influence over executive team commitment to technical IT initiatives.*

### **Prestige Power**

*Prestige power is defined as the "managers' reputation in the institutional environment and among stakeholders"* (Finkelstein 1992 p510). A CIO's reputation (or public image) is an asset the CIO can leverage to achieve and maintain status within the company because it reflects the perceptions others have about the CIO's leadership quality (Applegate and Elam 1992; Mehra et al. 2006; Wasko and Faraj 2005). In particular, prestige power is greatest when the CIO is connected to powerful people outside and inside the company. Connections outside the company indicate the CIO is connected and knowledgeable about the industry and IT profession such that the CIO can develop a stronger employee base, gather information about new technologies, and add value to other people in the industry (Finkelstein 1992; Medcof 2008; Swanson 1994). For example, the CIO could discuss a new ERP package with a firm that has already installed the software to more clearly outline the risks and benefits associated with implementing it; as a result, the uncertainty associated with adopting that software package is reduced (Burkhardt and Brass 1990; Jaspersen et al. 2002).

Similarly, connections inside the company ensure the CIO is socialized and integrated into the company's environment (Perrewe and Nelson 2004; Preston and Karahanna 2009). Through informal contact, executives are socialized and gain a better understanding of their firms' values and mission (Armstrong and Sambamurthy 1999; Preston and Karahanna 2009). CIOs who frequently associate with other executive team members on an informal basis are able to establish business contacts, receive new career opportunities, develop a strong social support system, gain sponsorship, and obtain company information (i.e. the "good old boy network") (Perrewe and Nelson 2004 p369).

Specifically, external connections may create a dependent relationship between the executive team and CIO since the executive team often needs to reduce any uncertainty about hiring new employees or implementing new systems by consulting external partners with prior experience. Additionally, internal connections may create a similar dependent relationship between the executive team and CIO because the CIO may be more integrated into and accepted by the team (Brass et al. 2004; Perrewe and Nelson 2004), which may increase the CIO's status as an exchange partner (Stam and Elfring 2008). As a result, executive teams may be more dependent upon CIOs with strong external and internal connections because the team trusts the CIO's judgment; this is the motivational investment component from Emerson's Power-Dependence Perspective (Emerson 1962; Medcof 2008; Swanson 1994). Since we expect the relationship between prestige power and influence over strategic and technical IT initiatives will be positive, we posit:

*H3a: CIOs with higher levels of prestige power will report a greater influence over executive team commitment to strategic IT initiatives.*

*H3b: CIOs with higher levels of prestige power will report a greater influence over executive team commitment to technical IT initiatives.*

### **Political Skill as a Moderator**

*Political skill is “the ability to effectively understand others at work, and to use such knowledge to influence others to act in ways that enhance one’s personal and/or organizational objectives”* (Ahearn et al. 2004, p311; Ferris et al. 2005 p127; Treadway et al. 2007 p850) and is comprised of four sub-skills: social astuteness, interpersonal influence, networking ability, and apparent sincerity (Ferris et al. 2005). While formal position, intelligence, and connections may partly determine the CIO's influence over the

executive team's commitment to IT initiatives, CIOs may also need to navigate highly political environments since executive team members frequently have conflicting goals that are frequently resolved by following the desires and choices of the most powerful people (Eisenhardt and Zbaracki 1992; March 1962; Salancik and Pfeffer 1974). This suggests CIOs may also need to engage in political activity to enhance their power to influence the executive team's commitment to IT initiatives (Eisenhardt and Zbaracki 1992; Pettigrew 1973; Pfeffer 1981). In particular, we argue political skill is a key measure of the CIO's political ability and that CIOs use political skill to enhance their structural, expert, and prestige power as a way of increasing their influence over the executive team's commitment to strategic and technical IT initiatives.

### **Structural Power Moderated by Political Skill**

Social influence researchers have argued that influence attempts should be carefully chosen and any ulterior motives should be disguised with perceptions of genuineness and sincerity (Enns et al. 2003b; Giordano and George 2009; Treadway et al. 2007). In particular, research has shown a CIO who uses hard tactics like authority or edicts is less successful than one who uses soft tactics like persuasion or consultation (Enns et al. 2003b; Falbe and Yukl 1992). This suggests the use of structural power to influence the executive team may need to be tempered with political activities that reduce the appearance of conflict (Eisenhardt and Zbaracki 1992).

By using political skill, CIOs may be able to establish positive social relationships with their executive team by influencing the perceptions, interpretations, and reactions of the team in such a way that promotes a sense of similarity between the CIO and the team (Kolodinsky et al. 2007; Stephens et al. 1992; Xu et al. 2010). As a result, the team may

be more likely to report strong linkages to the CIO, may view the CIO as socially effective, and may be more willing to comply with the CIO's initiatives (Markham 1998; Treadway et al. 2008; Xu et al. 2010). In other words, we posit the combination of position power (i.e. structural power) with personal power (i.e. political skill) will strengthen the CIO's influence over executive team commitment to strategic and technical IT initiatives (Enns et al. 2003a). Hence, executive team members may be more likely to defer to the CIO if the CIO is politically savvy (Griffith et al. 1998). Therefore, we propose:

*H4a: CIOs with political skill will enhance (positively moderate) the relationship between structural power and influencing executive team commitment to strategic IT initiatives.*

*H4b: CIOs with political skill will enhance (positively moderate) the relationship between structural power and influencing executive team commitment to technical IT initiatives.*

#### **Expert Power Moderated by Political Skill**

Research has suggested CIOs can more successfully navigate the organizational environment by having a clear understanding of the business in addition to demonstrating technical competence (Applegate and Elam 1992; Preston and Karahanna 2009). Yet, acquiring technical and business knowledge is not sufficient because the knowledge itself does not account for the social context inherent in the upper levels of management (Blass and Ferris 2007; Eisenhardt and Zbaracki 1992; Enns et al. 2011; Xu et al. 2010). To deal with this political aspect of the business, CIOs may need to use their political skill to develop contextual knowledge that complements their technical and business competence (Dahan 2005; Enns et al. 2011; Lerouge et al. 2005). For example, CIOs who combine political skill with their business and technical knowledge may be able to adapt their

knowledge to specific situations and, therefore, deal with the uncertainty of their leadership challenges more effectively than CIOs who are grounded only in technical or business competence (Blass and Ferris 2007; Karimi et al. 2001). These CIOs may also be more likely to appropriately interpret the behavior of their business partners (King 2008), influence their executive peers using business language (Feeny et al. 1992; Preston and Karahanna 2009), and draw those peers into a networking relationship (Applegate and Elam 1992). By politically engaging the executive team, CIOs may give credence to their knowledge such that the team may be more likely to champion IT (e.g. participate in IT-related management decisions) and seek the participation of IT executives in their business management decisions (Bassellier et al. 2003; Jarvenpaa and Ives 1991). Since this indicates CIOs with political skill may enhance the relationship between their expert power and the influence they exercise over the executive team's commitment to IT initiatives, we posit:

*H5a: CIOs with political skill will enhance (positively moderate) the relationship between expert power and influencing executive team commitment to strategic IT initiatives.*

*H5b: CIOs with political skill will enhance (positively moderate) the relationship between expert power and influencing executive team commitment to technical IT initiatives.*

### **Prestige Power Moderated by Political Skill**

If the CIO is to play a central role in the business strategies and processes, the CIO has to influence the executive team's choices to utilize technology (Enns et al. 2003b; Karahanna and Watson 2006). While the CIO's reputation may play a role in this influence, new technology initiatives may conflict with the existing business practices, causing political tensions (Eisenhardt and Zbaracki 1992). As such, the CIO may need

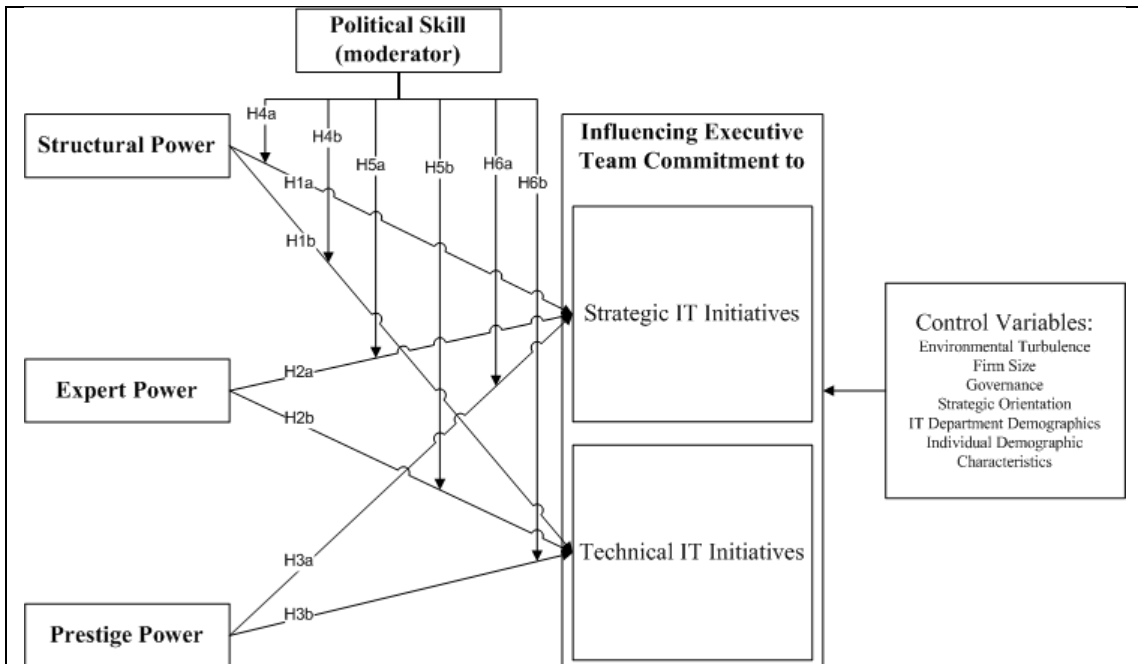


more than reputation to build relationships of trust with the executive team. In other words, the CIO may need to leverage political skill as a way of coping with any political tensions that exist. For example, the CIO may need to actively participate in networking (one component of political skill) so the CIO becomes well connected and centrally located in many, diverse social networks (Lee and Anderson 2007; Smaltz et al. 2006; Stephens et al. 1992). By developing connections to important people within and outside the firm, CIOs may be able to further extend their understanding of the social context that surrounds their companies. As such, the CIO may be able to address issues in more compelling ways, using real-world examples from other companies (i.e. using external contacts), such that the CIO may have a greater influence over the executive team's commitment to IT initiatives (Smaltz et al. 2006). Hence, we propose:

*H6a: CIOs with political skill will enhance (positively moderate) the relationship between prestige power and influencing executive team commitment to strategic IT initiatives.*

*H6b: CIOs with political skill will enhance (positively moderate) the relationship between prestige power and influencing executive team commitment to technical IT initiatives.*

Taken together, the model proposes that structural, expert, and prestige power are main antecedents to the CIO's influence over the executive team's commitment to strategic and technical IT initiatives. Furthermore, these relationships will be moderated by political skill. Finally, we include salient control variables for the power-influence relationship as discussed in the next section. This is illustrated in Figure 18.



**Figure 18: Essay 3 Research Model**

### Control Variables

Table 46 summarizes the control variables considered in this study. These variables include organizational variables (i.e. environmental turbulence, firm size, governance, and strategic orientation), IT department demographics, and individual demographic characteristics of the CIO. These control variable choices correspond to the extant literature (Hambrick and Finkelstein 1987; Li et al. 2006b; Preston et al. 2008).

**Table 46: Control Variables for Essay 3**

<b>Control Variable</b>	<b>Definition</b>	<b>Rationale</b>	<b>References</b>
Environmental Turbulence	the degree of uncertainty, instability, unpredictability, and complexity that exists in the external environment	executive teams may or may not be more likely to commit to IT initiatives in an attempt to cope with more turbulent environments	(Hambrick and Mason 1984; Kearns and Lederer 2004; Teo and King 1997)
Firm Size	measured in terms of employees and revenues	large firms may require more comprehensive and formal strategy-making processes and planning than smaller firms, hence there may be more commitment to IT initiatives on the part of the executive team	(Armstrong and Sambamurthy 1999; Chan et al. 2006; Cragg et al. 2002)
Governance	a firm that is "characterized by its level of decentralization, formalization, and complexity"; specifically, we focus on two, opposite governance structures: centralization and decentralization	centralization may be required to gain commitment from the executive team	(Bergeron et al. 2001 p130; Brown 1999; Kearns and Sabherwal 2006; Mehta and Hirschheim 2007)
Strategic Orientation	"the determination of the basic long-term goals of an enterprise, and the adoption of courses of action and allocation of resources necessary for carrying out these goals"; in particular, we use Porter's (1980) generic strategies of cost leadership and differentiation	a firm's strategic orientation may or may not determine the relationship between IT and the executive team	(Banker et al. 2011; Bergeron et al. 2001; Chandler 1962 p13; Tallon 2007b; Tallon et al. 2000)

**Table 46: Control Variables for Essay 3**

<b>Control Variable</b>	<b>Definition</b>	<b>Rationale</b>	<b>References</b>
IT Department Demographics	the number of IT employees, IT spending, IT department age, corporate versus non-corporate IT department	large, older, corporate IT departments may have broader access to technological knowledge, which may or may not ease IT decisions and facilitate executive team commitment	(Karimi et al. 2000; Li et al. 2006b; Teo et al. 2003)
Individual Demographic Characteristics	age, gender, tenure at company, tenure in current job, formal education, and career orientation	older, more experienced CIOs may gain more clout in their firms such that commitment from the executive team may be facilitated, but these CIOs may also be more aloof	(Banker et al. 2011; Enns et al. 2003b; Feeny et al. 1992; Hambrick and Mason 1984; Jarvenpaa and Ives 1991; Li et al. 2006b; McMurtrey et al. 2002; Preston et al. 2008; Raghunathan and Raghunathan 1989)

## **RESEARCH METHOD**

### **Instrument Development Process**

Following the procedures employed by Moore and Benbasat (1991), we developed our instruments in three stages. First, we identified existing scales for political skill and expert, structural, and prestige power from our model (Figure 17). We created items for the new constructs, Executive Team Commitment to Technical IT Initiatives and Executive Team Commitment to Strategic IT Initiatives. The references for the adopted items are presented in Table 47. Second, we analyzed the reliability and validity of our measures. Finally, we ran a preliminary analysis of our model.

**Table 47: Item Adoption for Essay 3**

Construct	Reference for Items
Expert Power (Business and Technical Knowledge)	(Henry 2004; Preston and Karahanna 2009)
Structural Power (Reporting Level)	(Preston and Karahanna 2009)
Prestige Power (Managerial Ties)	(Peng and Luo 2000; Preston and Karahanna 2009)
Political Skill	(Ferris et al. 2005)

**Item Creation**

As detailed by Moore and Benbasat (1991), the objective of this stage was to ensure content validity of the pool of existing and created items. First, we collected instruments for the existing constructs as referenced in Table 47. Second, we created items for the new constructs. These items are presented in Table 48.

**Table 48: Items for Q-sort in Essay 3**

Construct	Item ID	Item
Executive Team Commitment to Technical IT Initiatives	TA1	I guide the decision-making process our executive team uses concerning the <i>IT architecture</i> .
	TA2	I make decisions about the <i>IT architecture</i> on behalf of our executive team.*
	TA3	Our executive team follows my advice about how the <i>IT architecture</i> should be designed.
	TA4	My advice impacts the <i>IT architecture</i> decisions for the firm.
	TIV1	I guide the decision-making process our executive team uses concerning <i>IT investments</i> .
	TIV2	I make decisions about <i>IT investments</i> on behalf of our executive team.*
	TIV3	Our executive team follows my advice on <i>investing in IT</i> .
	TIV4	My advice impacts the <i>IT investment</i> decisions for the firm.
	TIF1	I guide the decision-making process our executive team uses concerning the <i>IT infrastructure</i> .
	TIF2	I make decisions about the <i>IT infrastructure</i> on behalf of our executive team.*
	TIF3	Our executive team follows my advice about how the <i>IT infrastructure</i> should be designed.
	TIF4	My advice impacts the <i>IT infrastructure</i> decisions for the firm.
	TAD1	I guide the decision-making process our executive team uses concerning <i>application development</i> .

**Table 48: Items for Q-sort in Essay 3**

<b>Construct</b>	<b>Item ID</b>	<b>Item</b>
	TAD2	I make decisions about <i>application development</i> on behalf of our executive team.*
	TAD3	Our executive team follows my advice on managing <i>application development</i> .
	TAD4	My advice impacts the <i>application development</i> decisions for the firm.
	TO1	I guide the decision-making process our executive team uses concerning <i>IT outsourcing</i> .
	TO2	I make decisions about <i>IT outsourcing</i> on behalf of our executive team.*
	TO3	Our executive team follows my advice on <i>IT outsourcing</i> .
	TO4	My advice impacts the <i>IT outsourcing</i> decisions for the firm.
Executive Team Commitment to Strategic IT Initiatives	SP1	I typically persuade our executive team to commit to strategic IT initiatives.
	SP2	I typically persuade our executive team to support and enhance the firm's strategy
	SP3	I typically persuade our executive team that IT has potential to positively impact the firm's strategic direction.
	SF1	Our executive team follows my advice on strategic initiatives.
	SF2	Our executive team follows my advice on using IT to support and enhance the firm's strategy.
	SF3	Our executive team follows my advice on using IT to positively impact the firm's strategic direction.
	SA1	My advice impacts executive team decisions on strategic IT initiatives.
	SA2	My advice impacts executive team decisions on using IT to support and enhance the firm's strategy.
	SA3	My advice impacts executive team decisions on using IT to positively impact the firm's strategic direction.

\*Items Dropped for the Full Survey

### Scale Development

The goal of this stage was to demonstrate the reliability and convergent and discriminant validity of the various items. To achieve this goal, we created a survey with the definitions listed at the top of the page. Then, the items were listed in random order<sup>41</sup> below the definitions for the judges to indicate the most appropriate construct category

<sup>41</sup> All the judges received the same ordering for the items.

for each item. Consistent with the procedures employed by Moore and Benbasat (1991), if the judges consistently placed an item within a particular category, it was considered to demonstrate content validity. Potentially, this will indicate the items will demonstrate convergent validity with the related construct and discriminant validity with the other constructs during survey deployment. To assess the consistency (i.e. reliability) of the judges' sorting, we followed the procedure employed by Moore and Benbasat (1991) and measured the overall frequency with which all judges placed items within the intended theoretical construct where higher percentages of placement in the target constructs indicates higher inter-rater agreement across the panel. Scales with a higher percentage indicate the judges categorized the items into the intended construct. While this is more qualitative than quantitative, the goal of this calculation is to highlight problem items and establish the construct validity of the scales (Moore and Benbasat 1991).

### **Q-Sorting Round**

We had a judges' panel sort the items in the pool into separate categories based on the construct definitions and the similarities and differences among the items. Based on their placement, we then re-examined the items for inappropriate wording or ambiguity and eliminated or re-worded the items as necessary. Finally, we combined all the items into an overall instrument for pre-testing, pilot testing and then full deployment. This process is described in detail in the following sections.

For the sorting round, we involved four PhD students as judges<sup>42</sup>. These judges were asked to sort the items based on the construct definitions we provided but were given liberty to either not sort the item or choose an "other" or "n/a" classification.

---

<sup>42</sup> 3 MIS PhD Students, 1 MIS PhD Candidate

Examination of the off-diagonal entries in Table 49 revealed the judges were able to sort most of the items correctly. The overall placement of ratio of items within the target constructs was 92.2%. This indicated the items were generally being placed as they were intended. Thus, it was concluded the development process resulted in scales which demonstrated content validity, which suggested a high potential for construct and discriminant validity as well as very good reliability coefficients.

<b>Table 49: Item Placement Ratios for Essay 3</b>					
<b>Target Category:</b> Executive Team Commitment To...	<b>Actual Category</b>			<b>Total</b>	<b>Target %</b>
	T	S	n/a		
Technical IT Initiatives (T)	73	--	6	79	92.4%
Strategic IT Initiatives (S)	1	33	2	36	91.7%
<b>Total Item Placements</b>	115				
<b>Hits</b>	106				
<b>Overall Hit Ratio</b>	92.2%				

### **Instrument Testing**

The next stage of the development process is to analyze the content of the overall instrument through pre-testing and then collect representative data through pilot testing for a preliminary analysis (Churchill 1979; Moore and Benbasat 1991). For pre-testing the lead author scheduled interviews with 2 academics well-versed in survey creation and administration and with 6 practitioners familiar with CIO issues<sup>43</sup>. These interviews lasted an average of 45 minutes and the feedback was incorporated into the survey. For example, updates were made to the a) introduction such that the purpose of the survey was more clearly communicated, b) instructions in each section to clarify the purpose of the given items, and c) items to ensure they weren't too wordy and were consistent.

<sup>43</sup> 3 CIOs (Clyde Fowler, Greenfield Industries; Keith Knight, TTI Group North America; Chris Palmer, Concentrix), 1 CTO (Jim Pepin, Clemson), 1 former CIO (Phil Yanov, GSATC), and 1 CIO consultant (Bill Bliss, Bliss & Associates Inc.)



Additionally, we added three additional items to the executive team commitment to strategic IT initiatives construct to capture the "make decisions" aspect from the executive team commitment to technical IT initiatives construct. The complete list of items is shown in Appendix N.

## **SURVEY ADMINISTRATION**

Once the pre-testing was complete and the survey was updated appropriately, a pilot of the overall instrument was administered as detailed in Appendix N. To address the insignificant relationships we found in the pilot study, we expanded the Business Knowledge items, added External and Internal Reputation items for Prestige Power, and included Role Importance items for Structural Power. We then went through further instrument development to ensure our respondents would read the questions the way we intended. After making additional changes based on the feedback we received, we administered the survey to the *Research Now* CIO panel. We then analyzed the reliability and validity (including discriminant, convergent, and predictive validity) of the items, tested for moderation of political skill, analyzed the control variables, and assessed the threat of common method bias. This process is described in detail in the following paragraphs.

### **Further Instrument Development and Testing**

Since our pilot study indicated we may not find significant relationships among the constructs, we added additional items to ensure we were capturing the constructs to their full extent and then re-analyzed the content of the overall instrument through another round of pre-testing. For pre-testing, the lead author scheduled interviews with 2

more CIO practitioners<sup>44</sup>. These interviews lasted an average of 60 minutes and the feedback was incorporated into the survey. Specifically, we gathered information about exactly how the CIOs interpreted the questions (i.e. we asked them to put the items in their own words). Based on their feedback, updates were made to the a) wording of certain items for additional clarity and the b) stems of some questions to guide respondent thinking. The complete list of items is shown in Table 50 and the stems are illustrated in Appendix O.

**Table 50: Items Included in the Full Study for Essay 3**

Construct	Item ID	Item
Influence over Executive Team Commitment to Technical IT Initiatives	TIF1	I guide the decision-making process our executive team uses concerning the <i>IT infrastructure</i> .
	TIF2	Our executive team follows my advice about how the <i>IT infrastructure</i> should be designed.
	TIF3	My advice impacts the <i>IT infrastructure</i> decisions for the firm.
	TIV1	I guide the decision-making process our executive team uses concerning <i>IT investments</i> .
	TIV2	Our executive team follows my advice on <i>investing in IT</i> .
	TIV3	My advice impacts the <i>IT investment</i> decisions for the firm.
	TAD1	I guide the decision-making process our executive team uses concerning <i>application development</i> .
	TAD2	Our executive team follows my advice on managing <i>application development</i> .
	TAD3	My advice impacts the <i>application development</i> decisions for the firm.
	TA1	I guide the decision-making process our executive team uses concerning the <i>IT architecture</i> .
	TA2	Our executive team follows my advice about how the <i>IT architecture</i> should be designed.
	TA3	My advice impacts the <i>IT architecture</i> decisions for the firm.
	TO1	I guide the decision-making process our executive team uses concerning <i>IT outsourcing</i> .
	TO2	Our executive team follows my advice on <i>IT outsourcing</i> .

<sup>44</sup> These CIOs requested anonymity due to the sensitive nature of their industries. Both companies have locations world-wide. The locations the CIOs are responsible for have 200+ employees with revenues over \$10 million.

**Table 50: Items Included in the Full Study for Essay 3**

<b>Construct</b>	<b>Item ID</b>	<b>Item</b>
	TO3	My advice impacts the <i>IT outsourcing</i> decisions for the firm.
Influence over Executive Team Commitment to Strategic IT Initiatives	SP1	to commit to strategic IT initiatives.
	SP2	to use IT to support and enhance the firm's strategy.
	SP3	that IT has potential to positively impact the firm's strategic direction.
	SF1	strategic IT initiatives.
	SF2	using IT to support and enhance the firm's strategy.
	SF3	using IT to positively impact the firm's strategic direction.
	SM1	strategic IT initiatives.
	SM2	using IT to support and enhance the firm's strategy.
	SM3	using IT to positively impact the firm's strategic direction.
	SA1	strategic IT initiatives.
	SA2	using IT to support and enhance the firm's strategy.
SA3	using IT to positively impact the firm's strategic direction.	
Expert Power	BK1	Your firm's present products
	BK2	Your firm's future products
	BK3	Your firm's present markets
	BK4	Your firm's future markets
	BK5	Your firm's present business strategies
	BK6	Your firm's future business strategies
	BK7	Your firm's present general business practices
	BK8	Your firm's future general business practices
	BK9	Your firm's competitors
	BK10	Your industry's practices
	TK1	Information systems in general
	TK2	Information systems within your firm
	TK3	How IT may be used for strategic advantage
	TK4	Emerging technologies
	TK5	Competitors' use of IT
	TK6	Systems development processes
	TK7	Difficulties of developing information systems
	TK8	Costs associated with information systems
	TK9	How IT fits into your firm's overall strategy
	TK10	Information systems support of the business processes within your firm
Prestige Power	PPE1	at customer or potential customer firms.
	PPE2	at supplier firms.

**Table 50: Items Included in the Full Study for Essay 3**

<b>Construct</b>	<b>Item ID</b>	<b>Item</b>
	PPE3	at competitor firms.
	PPE4	involved in industry association(s) your company belongs to.
	PPI1	informal contact such as meeting at the coffee machine or in the hall
	PPI2	informal exchanges such as impromptu phone calls or e-mails
	PPI3	socialization outside work (for example, social gatherings, golf, tennis, etc)
	PPRE1	value my competence.
	PPRE2	value my contributions.
	PPRE3	respect my ideas.
	PPRE4	ask for my opinions.
	PPRE5	follow my suggestions.
	PPRE6	think the way I do my job adds value.
	PPRE7	respect my personal quality.
	PPRI1	values my competence.
	PPRI2	values my contributions.
	PPRI3	respects my ideas.
	PPRI4	asks for my opinions.
	PPRI5	follows my suggestions.
PPRI6	thinks the way I do my job adds value.	
PPRI7	respects my personal quality.	
Structural Power	SPFI1	I attend all executive team meetings.
	SPFI2	I am invited to executive team conferences.
	SPFI3	I have the same formal authority as executive team members such as the COO or CFO.
	SPFI4	I receive the same institutional backing as executive team members such as the COO or CFO.
	SPFI5	On the organizational chart, I occupy the same level as executive team members such as the COO or CFO.
	SPRI1	Many people in other departments depend on me to deliver good outcomes for the services I provide
	SPRI2	I feel that I play a central role in making the organization function efficiently
	SPRI3	I feel that I play a central role in making the organization function effectively
	SPRI4	Executive team members have few alternative sources for IT services I am responsible for delivering
	SPRL1	How many reporting levels are between you and your firm's CEO?

**Table 50: Items Included in the Full Study for Essay 3**

<b>Construct</b>	<b>Item ID</b>	<b>Item</b>
	SPFI6	Which of the following best describes your involvement with your firm's executive team?
Political Skill	PS1	I understand people very well.
	PS2	I am particularly good at sensing the motivations and hidden agendas of others.
	PS3	I have good intuition or savvy about how to present myself to others.
	PS4	I am able to make most people feel comfortable and at ease around me.
	PS5	I am able to communicate easily and effectively with others.
	PS6	I spend a lot of time and effort at work networking with others.
	PS7	I am good at building relationships with influential people at work.
	PS8	I have developed a large network of colleagues and associates at work whom I can call on for support when I really need to get things done.
	PS9	When communicating with others, I try to be genuine in what I say and do.
	PS10	I always seem to instinctively know the right things to say or do to influence others.
	PS11	I pay close attention to people's facial expressions.
	PS12	It is easy for me to develop good rapport with most people.
	PS13	I am good at getting people to like me.
	PS14	At work, I know a lot of important people and am well connected.
	PS15	I spend a lot of time at work developing connections with others.
	PS16	I am good at using my connections and network to make things happen at work.
	PS17	It is important that people believe I am sincere in what I say and do.
	PS18	I try to show a genuine interest in other people.
Common Method Bias Variable	CMB1	I am an optimist.
Environmental Turbulence (Adapted from Kearns and	ET1	In your firm's industry, how certain are the following: Customers' buying habits
	ET2	In your firm's industry, how certain are the following: The nature of competition

**Table 50: Items Included in the Full Study for Essay 3**

<b>Construct</b>	<b>Item ID</b>	<b>Item</b>
Lederer 2004)	ET3	In your firm's industry, how certain are the following: Product lines
Firm Size	FREV	Dummy Coded (in millions): <20 = 1, 20-50 = 2, 51-100 = 3, 101-500 = 4, 501-1000 = 5, and >1000 = 6
	FEMP	Dummy coded: <300 = 1, 300-1000 = 2, 1001-5000 = 3, 5001-25,000 = 4, >25,000 = 5 for employees
Governance (Adapted from Kearns and Lederer 2004)	GOV1	In my firm, IT decision-making responsibilities are centralized for application development including outsourcing.
	GOV2	In my firm, IT decision-making responsibilities are centralized for procurement of hardware and software.
	GOV3	In my firm, IT decision-making responsibilities are centralized for staffing IT positions.
	GOV4	In my firm, IT decision-making responsibilities are centralized for procurement and development of infrastructure.
Strategic Orientation (Adapted from Bergeron et al. 2004)	STOR1	Indicate the degree to which your firm uses IT to reduce your firm's production costs.
	STOR2	Indicate the degree to which your firm uses IT to make substantial savings.
	STOR3	Indicate the degree to which your firm uses IT to improve your firm's productivity.
	STOR4	Indicate the degree to which your firm uses IT to increase your firm's profitability.
	STOR5	Indicate the degree to which your firm uses IT to improve the quality of products or services.
	STOR6	Indicate the degree to which your firm uses IT to respect the deadlines requested by your customers.
IT Demographics	ITEMP	Dummy coded: <10 = 1, 10-50 = 2, 51-100 = 3, 101-500 = 4, 501-1000 = 5, 1001-5000 = 6, >5000 = 7
	ITSPD	Dummy coded (% of firm revenues): 0-1% = 1, 1-2.5% = 2, 2.6-5% = 3, 5.1-10% = 4, 10.1-15% = 5, 15.1-20% = 6, 20.1-25% = 7, >25% = 8
	ITAGE	What year was your IT department formed (4-digit year)?
	ITCRP1	Are you the head of an IT department at a location that is geographically separated from the central headquarters of your firm? (Yes/No)
	ITCRP2	I am the head of the IT department for (multiple selection): the entire firm, the central headquarters, one physical location (not headquarters), one organizational unit (for example, branch, division, or strategic business unit)
CIO Demographics	CIOTEN	Dummy coded (# of years in current position): <1 = 1, 1-5 = 2, 6-10 = 3, 11-15 = 4, 16+ = 5

**Table 50: Items Included in the Full Study for Essay 3**

Construct	Item ID	Item
	ITTEN	Dummy coded (# of years in IT): <1 = 1, 1-5 = 2, 6-10 = 3, 11-15 = 4, 16+ = 5
	FTEN	Dummy coded (# of years in current firm): <1 = 1, 1-5 = 2, 6-10 = 3, 11-15 = 4, 16+ = 5
	CIOAGE	Dummy coded (age on last birthday): <30 = 1, 30-35 = 2, 36-40 = 3, 41-45 = 4, 46-50 = 5, 51-55 = 6, >55 = 7
	GENDER	Dummy coded: Male = 0, Female = 1

### Research Design

As stated in Essay 2, the full study was administered through *Research Now*, a national market research firm. Details on the *Research Now* panel can be found there.

### Sample Size

The power of a statistical test is defined as the probability of falsely accepting the null hypothesis (that there is no relationship) when, in fact, a relationship does exist (Cohen 1988). Power is the probability of not making this type of error (i.e. correctly rejecting the null hypothesis) (Cohen 1988). Based on our model containing three independent variables, one moderator variable, and one dependent variable, we calculated the sample size required to achieve the desired level of power (we adopted Cohen's (1988) recommended guideline of 0.80). We used the calculations from Maxwell (2000) as shown in following formula to compute two different scenarios.

$$sample\ size = \frac{L}{\left( \frac{sr^2}{\left( 1 - \frac{(\#IV * mean\ r^2_{xy})}{(1 + (\#IV - 1) * mean\ r^2_{xx})} \right)} \right) + \#IVs + 1}$$

where  $L$  = lambda corresponding to the 0.80 power level,  $sr^2$  = estimation of a single IV substitute,  $r^2_{xy}$  = estimated population squared multiple correlation among the IVs (independent variable) and DV (dependent variable), and  $r^2_{xx}$  = estimated population squared multiple correlation among the IVs

Scenario 1: Where  $L = 7.85$ ,  $\#IV = 4$ ,  $\text{mean } r^2_{xy} = 0.2$ , and  $\text{mean } r^2_{xx} = 0.35$ , the required sample is 133.

Scenario 2: Where  $L = 7.85$ ,  $\#IV = 4$ ,  $\text{mean } r^2_{xy} = 0.25$ , and  $\text{mean } r^2_{xx} = 0.4$ , the required sample is 118.

Going with the more conservative estimate, the desired sample size is 133.

Therefore, the survey was sent to 1,077 CIOs in the *Research Now* CIO panel. Of these, 218 panelists clicked on the e-mail to the survey link page. Eighteen respondents chose not to enter the survey. The screening question eliminated 36 respondents. An additional 10 respondents responded the same to all questions in the survey (e.g. one respondent chose the second to last response for every item). A total of 130 questionnaires were completed and 3 additional responses were identified as outliers (see below for the complete analysis), resulting in 127 usable responses with a response rate of 11.8 percent. While this response rate is low, this is consistent with research conducted on CIOs where response rates range from 7 to 20% (Oh and Pinsonneault 2007; Preston et al. 2006) (e.g. 12% for Chen et al. 2010a; 9.4% and 15.2% for Preston et al. 2006) . The demographic statistics for the respondents are illustrated in Table 51.

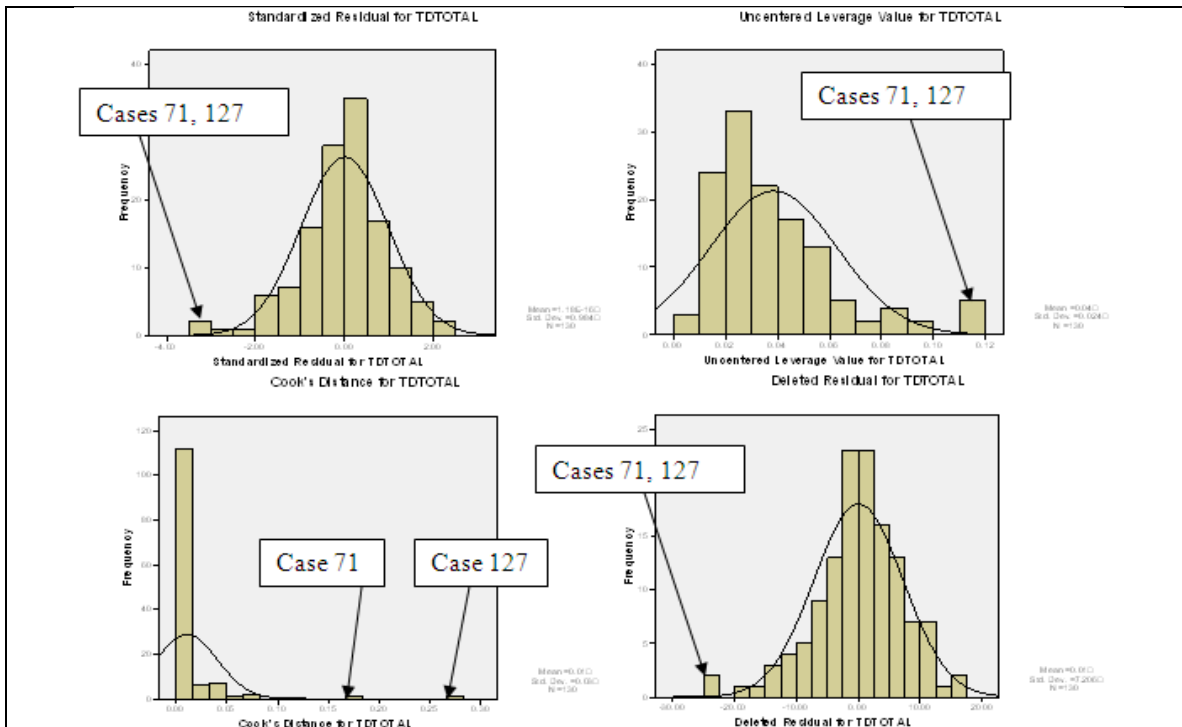
<b>Table 51: Demographic Statistics for Essay 3 (n=127)</b>				
<b>Characteristic</b>		<b>Frequency</b>		
Gender	Male	104		
	Female	16		
	Unreported	7		
College Education	Average = 5.46 years			
Experience		Industry	CIO	IT
	<1 year	2	2	0
	1-5 years	31	44	4
	6-10 years	33	43	16
	11-15 years	32	16	30



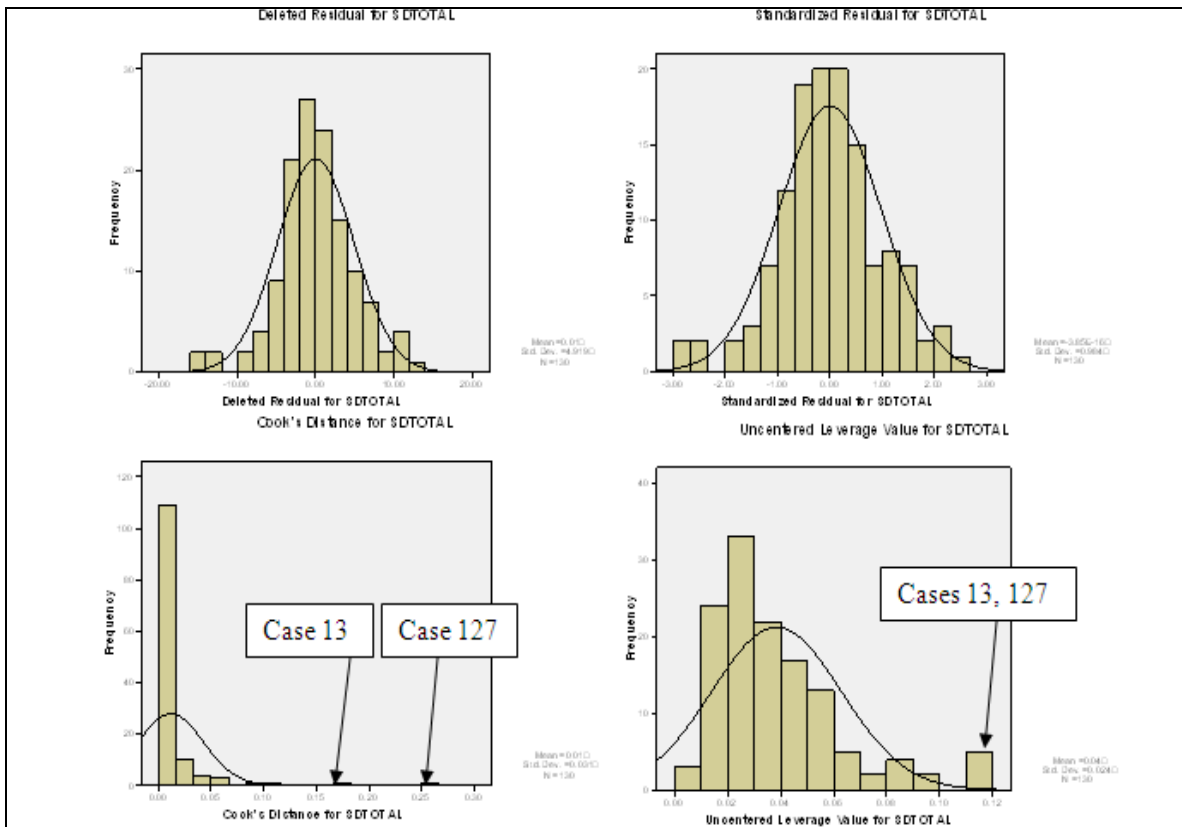
<b>Table 51: Demographic Statistics for Essay 3 (n=127)</b>				
<b>Characteristic</b>		<b>Frequency</b>		
	16+ years	26	15	74
Status	Direct Report to CEO	72		
	One Level to CEO	45		
	2+ Levels to CEO	10		
Title	CIO	62		
	CTO	16		
	Director of IT	17		
	VP of IT	14		
	Other	18		
Age	Average = 45.82			
Firm Type	Public	38		
	Private	79		
Firm Size (revenue in \$millions)	<100	27		
	101-500	29		
	501-1000	21		
	>1000	29		
Industry	Manufacturing	42		
	Service	44		
	Other	41		

### **Outlier Analysis**

Before analyzing the validity and reliability of our items and to ensure none of the cases would distort our results, we used SPSS 15.0 for Windows Grad Pack (LEADTOOLS 2006) to check for outliers. Specifically, we first analyzed the standardized and deleted residuals to ensure all the cases were within  $\pm 3$  standard deviations (Daniel and Terrell 1995). As illustrated in Figures 19 and 20, cases 13, 71 and 127 were potential outliers. Next, we analyzed the Leverage and Cook's values to assess the distance for each case from all other cases (Tabachnick and Fidell 2007). As illustrated in Figures 19 and 20, we found additional evidence that cases 13, 71 and 127 were outliers. Since we determined these three cases could potentially distort our results, we deleted them from further analysis.



**Figure 19: Outlier Analysis - Technical IT Initiatives as the Dependent Variable (Full)**



**Figure 20: Outlier Analysis - Strategic IT Initiatives as the Dependent Variable (Full)**

## Full Study Reliability, Convergent Validity, and Discriminant Validity Analyses

Upon collecting measures for all the constructs, we verified the unidimensionality of the variables by running an exploratory factor analysis (EFA) and checking the mean, skewness, kurtosis, loadings, and breadth of the constructs (Noar 2003). We used SPSS 15.0 for Windows Grad Pack (LEADTOOLS 2006) to run this analysis. As discussed earlier, Cronbach's alpha is standard in most reliability discussions and is considered acceptable between 0.50 and 0.60 during the early stages of research (Nunnally 1967) but a minimum reliability range of 0.70 to 0.80 is desirable (Moore and Benbasat 1991). We also looked for any severe nonnormality issues (skewness > 2, kurtosis > 7) (Fabrigar et al. 1999). Table 52 reveals satisfactory psychometric properties for all the measures except the IT infrastructure component of Commitment to Technical IT Initiatives. However, previous research indicates absolute values less than 3 and 10 for skewness and kurtosis, respectively, are generally considered within the range of univariate normality (Kock et al. 2006; Mardia 1970).

<b>Table 52: Essay 3 Full Study Psychometric Properties</b>					
<b>Construct</b>	<b>Reliability (alpha)</b>	<b>Mean</b>	<b>St. Dev</b>	<b>Skewness (error)</b>	<b>Kurtosis (error)</b>
Structural Power	0.88	42.87	6.58	-0.37 (0.22)	-0.24 (0.43)
Formal Interaction	0.88	23.75	4.83	-0.62(0.22)	0.02 (0.43)
Role Importance	0.81	16.63	2.38	-0.32(0.22)	-0.31(0.43)
Reporting Level	1.00	2.49	0.64	-0.88(0.22)	-0.28 (0.43)
Expert Power	0.94	83.26	9.93	-0.28 (0.22)	-0.31 (0.43)
Business Knowledge	0.92	41.01	5.62	-0.15 (0.22)	-0.52 (0.43)
Technical Knowledge	0.91	42.25	5.18	-0.39 (0.22)	-0.35 (0.43)
Prestige Power	0.87	92.22	12.54	-0.47(0.22)	0.58(0.43)
External Connections	0.86	17.52	5.01	-0.23 (0.22)	-0.44 (0.43)
Internal Connections	0.77	16.15	3.40	-1.31 (0.22)	2.42 (0.43)

<b>Table 52: Essay 3 Full Study Psychometric Properties</b>					
<b>Construct</b>	<b>Reliability (alpha)</b>	<b>Mean</b>	<b>St. Dev</b>	<b>Skewness (error)</b>	<b>Kurtosis (error)</b>
External Reputation	0.91	29.19	3.77	-0.22 (0.22)	-0.30 (0.43)
Internal Reputation	0.92	29.34	4.30	-0.92 (0.22)	0.70 (0.43)
Political Skill	0.93	74.55	8.50	-0.10 (0.22)	-0.63 (0.43)
Common Method Bias Variable	1.00	4.14	0.78	-0.76 (0.22)	0.37 (0.43)
Commitment to Strategic IT Initiatives	0.93	50.65	6.29	-0.36 (0.22)	-0.11 (0.43)
CIO Persuading Executive Team	0.84	12.64	1.76	-0.47(0.22)	0.43(0.43)
Executive Team Following Advice	0.81	12.58	1.81	-0.28 (0.22)	-0.37(0.43)
CIO Making Decisions	0.87	12.75	1.95	-0.71 (0.22)	0.77(0.43)
Advice Impacting Executive Team	0.88	12.68	1.88	-0.70 (0.22)	0.81 (0.43)
Commitment to Technical IT Initiatives	0.93	65.30	8.12	-0.67 (0.22)	2.71 (0.43)
IT Architecture	0.88	13.13	1.99	-1.16(0.22)	1.73 (0.43)
IT Investments	0.83	13.20	1.75	-0.61 (0.22)	-0.54 (0.43)
IT Infrastructure	0.91	13.46	2.51	-2.63 (0.22)	7.96 (0.43)
IT Application Development	0.89	12.90	1.97	-0.83 (0.22)	0.62 (0.43)
IT Outsourcing	0.86	12.62	2.07	-0.74(0.22)	0.57(0.43)

Eigenvalues are the sum of the squared loadings and reflect the variance of the factors. Eigenvalues greater than 1 indicate the variance of the factor is larger than the variance of the indicators and should be counted as a factor (Fabrigar et al. 1999)<sup>45</sup>. Table 53 shows satisfactory loadings<sup>46</sup>. The Technical IT Initiatives, Strategic IT Initiatives, Technical Knowledge, and Political Skill indicators all loaded on their respective factors. Structural Power loaded with Business Knowledge. The Prestige Power Reputation

<sup>45</sup>We acknowledge using eigenvalues and % variance explained has significant problems (e. G. it is arbitrary to some extent) (Fabrigar et al. 1999).

<sup>46</sup> We also ran a confirmatory factor analysis using Smart PLS 2.0 to confirm these results. The results support the EFA and are available in Appendix O

indicators loaded with the Common Method Bias indicator. Finally, the Prestige Power external and internal indicators loaded on 2 different factors.

Then, we conducted an analysis to investigate convergent and discriminant validity for the constructs. For convergent validity, we evaluated the loading of each item onto its specified factor (Chin and Frye 1996). First, we compared the coefficients for the indicators with the standard errors, where the loadings should be at least twice as much as the standard error (Anderson and Gerbing 1988). Second, a t-statistic of 1.65 or higher suggests the item loading is significant at 0.05 (n=127). All the loadings are significant as illustrated in Table 54.

**Table 53: EFA Loadings for the Essay 3 Full Study**

Construct	Item	Factor							
		Commitment to Technical IT Initiatives	Structural Power / Business Knowledge	Commitment to Strategic IT Initiatives	Prestige Power (Reputation) / Common Method Bias Variable	Prestige Power (External)	Prestige Power (Internal)	Technical Knowledge	Political Skill
Commitment to IT Infrastructure Technical IT Initiatives	TIF1	<b>0.998</b>	-0.057	-0.008	0.004	0.003	0.003	-0.001	0.001
	TIF3	<b>0.877</b>	-0.023	-0.108	-0.010	0.008	-0.021	0.070	-0.076
	TIF2	<b>0.743</b>	-0.002	0.092	-0.167	0.085	-0.047	-0.114	-0.099
Commitment to Application Development Technical IT Initiatives	TAD3	<b>0.345</b>	0.635	0.173	-0.213	-0.066	-0.117	-0.070	0.030
	TAD2	<b>0.273</b>	0.626	0.321	-0.375	-0.060	-0.072	-0.221	0.054
	TAD1	<b>0.178</b>	0.581	0.242	-0.417	0.085	-0.130	-0.256	-0.092
Commitment to IT Investments Technical IT Initiatives	TIV3	<b>0.365</b>	0.513	0.297	-0.311	-0.180	-0.080	-0.025	-0.001
	TIV1	<b>0.356</b>	0.398	0.151	-0.221	-0.014	-0.182	0.032	-0.136
	TIV2	<b>0.288</b>	0.494	0.352	-0.259	-0.072	-0.176	0.017	-0.115
Commitment to IT Architecture Technical IT Initiatives	TA1	<b>0.451</b>	0.504	0.253	-0.380	-0.202	-0.055	-0.034	-0.031
	TA2	<b>0.344</b>	0.509	0.284	-0.355	-0.179	-0.063	-0.032	0.047
	TA3	<b>0.254</b>	0.532	0.182	-0.331	-0.282	-0.089	-0.007	-0.062
Commitment to IT Outsourcing Technical IT Initiatives	TO3	<b>0.290</b>	0.588	0.268	-0.275	-0.054	-0.173	-0.081	0.114
	TO1	<b>0.272</b>	0.556	0.364	-0.395	-0.157	-0.075	-0.256	0.123
	TO2	<b>0.267</b>	0.482	0.361	-0.360	0.055	-0.089	-0.002	-0.028
Business Knowledge for Expert Power	BK7	0.170	<b>0.698</b>	-0.670	-0.040	0.071	-0.066	-0.071	-0.007
	BK1	0.299	<b>0.692</b>	-0.129	-0.042	-0.133	0.170	0.094	0.133
	BK5	0.184	<b>0.656</b>	-0.159	-0.032	0.010	0.080	-0.007	0.161
	BK2	0.225	<b>0.639</b>	-0.136	-0.243	0.161	0.184	0.039	0.083
	BK6	0.224	<b>0.609</b>	-0.080	-0.095	0.149	0.113	-0.009	0.182
	BK10	0.217	<b>0.602</b>	-0.155	0.043	-0.024	0.167	0.194	0.093
	BK8	0.159	<b>0.600</b>	-0.363	-0.060	0.140	0.172	-0.040	0.053

**Table 53: EFA Loadings for the Essay 3 Full Study**

Construct	Item	Factor							
		Commitment to Technical IT Initiatives	Structural Power / Business Knowledge	Commitment to Strategic IT Initiatives	Prestige Power (Reputation) / Common Method Bias Variable	Prestige Power (External)	Prestige Power (Internal)	Technical Knowledge	Political Skill
	BK3	0.189	<b>0.578</b>	-0.229	-0.156	-0.005	0.150	0.143	0.034
	BK9	0.127	<b>0.545</b>	-0.228	-0.015	0.052	0.077	0.126	0.195
	BK4	0.012	<b>0.505</b>	-0.167	-0.113	0.177	0.135	0.123	0.173
Role Importance for Structural Power	SPRI3	0.282	<b>0.640</b>	0.258	0.094	-0.223	0.064	-0.015	0.154
	SPRI2	0.217	<b>0.636</b>	0.099	0.094	-0.055	-0.036	-0.017	0.130
	SPRI1	0.409	<b>0.615</b>	0.098	0.023	-0.319	-0.005	0.054	0.128
	SPRI4	0.270	<b>0.356</b>	0.277	0.006	-0.020	-0.131	0.035	0.073
Formal Interaction for Structural Power	SPFI2	0.213	<b>0.535</b>	0.265	0.123	0.184	-0.070	0.095	0.080
	SPFI6	0.140	<b>0.529</b>	0.231	0.059	0.114	0.046	0.163	0.200
	SPFI4	0.129	<b>0.462</b>	0.263	0.006	0.460	-0.005	0.269	0.068
	SPFI1	0.097	<b>0.426</b>	0.155	0.056	0.545	-0.005	0.288	-0.098
	SPFI3	0.139	<b>0.418</b>	0.242	0.016	0.556	-0.018	0.243	0.136
	SPFI5	0.180	<b>0.364</b>	0.225	-0.004	0.438	0.002	0.154	0.167
Reporting Level for Structural Power	SPRL1	0.175	0.075	0.044	-0.016	0.236	-0.039	<b>0.299</b>	-0.040
Executive Team Following Advice	SF1	0.241	0.346	<b>0.391</b>	-0.142	0.138	-0.131	0.021	-0.178
	SF3	0.330	0.577	<b>0.219</b>	-0.156	0.252	-0.087	0.108	-0.084
	SF2	0.241	0.441	<b>0.183</b>	-0.152	0.395	-0.064	0.190	-0.192
CIO Making Decisions	SM3	0.295	0.482	<b>0.363</b>	-0.245	0.026	0.131	0.152	-0.055
	SM1	0.330	0.493	<b>0.267</b>	-0.246	0.059	0.004	0.198	-0.199
	SM2	0.106	0.483	<b>0.244</b>	-0.199	0.144	0.087	0.180	-0.180
Advice Impacting Executive Team	SA2	0.424	0.443	<b>0.341</b>	-0.268	0.119	0.063	0.067	0.043
	SA1	0.320	0.461	<b>0.284</b>	-0.183	-0.022	0.031	0.165	0.111
	SA3	0.230	0.505	<b>0.269</b>	-0.173	0.066	0.068	0.157	-0.047
CIO Persuading Executive Team	SP1	0.330	0.524	<b>0.312</b>	-0.101	0.134	-0.007	0.080	-0.071
	SP2	0.311	0.497	<b>0.202</b>	-0.008	0.184	0.001	0.078	-0.224
	SP3	0.317	0.507	<b>0.192</b>	-0.019	0.111	0.085	0.040	-0.017

**Table 53: EFA Loadings for the Essay 3 Full Study**

Construct	Item	Factor							
		Commitment to Technical IT Initiatives	Structural Power / Business Knowledge	Commitment to Strategic IT Initiatives	Prestige Power (Reputation) / Common Method Bias Variable	Prestige Power (External)	Prestige Power (Internal)	Technical Knowledge	Political Skill
Common Method Bias Variable	CMB1	0.164	0.328	0.070	<b>0.427</b>	0.069	-0.027	-0.049	0.235
External Reputation for Prestige Power	PPRE7	0.187	0.589	0.118	<b>0.392</b>	-0.043	-0.127	-0.183	-0.127
	PPRE1	0.280	0.679	0.173	<b>0.366</b>	-0.141	0.000	-0.081	-0.136
	PPRE3	0.307	0.639	0.290	<b>0.359</b>	-0.081	-0.129	-0.099	-0.260
	PPRE4	0.159	0.516	0.150	<b>0.350</b>	0.027	-0.122	-0.239	-0.147
	PPRE6	0.154	0.591	0.192	<b>0.304</b>	0.055	0.000	-0.185	-0.084
	PPRE2	0.325	0.616	0.232	<b>0.297</b>	-0.140	0.050	-0.122	-0.116
	PPRE5	0.048	0.475	0.204	<b>0.253</b>	0.297	-0.036	-0.251	-0.167
Internal Reputation for Prestige Power	PPRI2	0.306	0.648	0.163	<b>0.359</b>	-0.103	-0.119	0.088	-0.206
	PPRI3	0.295	0.504	0.135	<b>0.353</b>	0.061	-0.005	0.167	-0.108
	PPRI4	0.209	0.511	0.173	<b>0.310</b>	0.045	-0.028	-0.033	-0.146
	PPRI5	0.197	0.544	0.198	<b>0.297</b>	0.148	-0.042	0.029	-0.187
	PPRI1	0.263	0.664	0.060	<b>0.265</b>	-0.079	-0.059	0.099	-0.194
	PPRI7	0.194	0.585	0.246	<b>0.201</b>	-0.065	-0.093	0.104	-0.113
	PPRI6	0.141	0.645	0.198	<b>0.189</b>	-0.035	-0.113	0.084	-0.223
External Connections for Prestige Power	PPE3	-0.145	0.124	0.241	-0.048	<b>0.585</b>	0.447	-0.270	-0.142
	PPE4	-0.143	0.239	0.121	0.026	<b>0.444</b>	0.445	-0.199	-0.030
	PPE1	-0.129	0.267	0.269	0.035	<b>0.391</b>	0.384	-0.204	-0.010
	PPE2	-0.121	0.258	0.202	-0.177	<b>0.319</b>	0.573	-0.285	-0.074
Internal Connections for Prestige Power	PPI2	0.042	0.131	-0.067	0.113	-0.323	<b>0.707</b>	-0.200	-0.086
	PPI1	0.002	0.161	-0.017	0.127	-0.197	<b>0.690</b>	-0.286	-0.130
	PPI3	-0.055	0.233	0.161	0.055	0.247	<b>0.508</b>	-0.201	-0.009
Technical Knowledge for Expert Power	TK4	-0.003	0.529	0.001	0.024	-0.015	0.138	<b>0.448</b>	0.106
	TK1	0.174	0.572	0.053	0.053	-0.399	0.198	<b>0.368</b>	0.021
	TK9	0.264	0.558	-0.084	-0.129	-0.250	0.343	<b>0.315</b>	0.013
	TK10	0.099	0.600	-0.303	-0.113	-0.220	0.212	<b>0.304</b>	-0.139
	TK8	0.129	0.532	-0.122	0.028	-0.292	0.187	<b>0.301</b>	-0.073
	TK2	0.226	0.593	-0.009	-0.052	-0.449	0.195	<b>0.281</b>	-0.029



**Table 53: EFA Loadings for the Essay 3 Full Study**

Construct	Item	Factor							
		Commitment to Technical IT Initiatives	Structural Power / Business Knowledge	Commitment to Strategic IT Initiatives	Prestige Power (Reputation) / Common Method Bias Variable	Prestige Power (External)	Prestige Power (Internal)	Technical Knowledge	Political Skill
	TK3	0.118	0.570	-0.114	-0.140	-0.193	0.204	<b>0.250</b>	0.082
	TK5	0.038	<b>0.435</b>	0.061	-0.060	0.242	0.322	0.182	0.076
	TK6	0.137	<b>0.586</b>	-0.014	-0.029	-0.032	0.297	0.133	-0.006
	TK7	0.106	<b>0.489</b>	-0.124	-0.071	-0.179	0.102	0.055	-0.060
Political Skill	PS1	0.207	0.413	0.192	0.332	-0.141	-0.017	-0.035	<b>0.497</b>
	PS6	0.070	0.335	0.248	0.084	0.326	0.029	-0.106	<b>0.492</b>
	PS2	0.206	0.519	0.255	0.194	-0.066	-0.053	-0.022	<b>0.367</b>
	PS10	0.121	0.369	0.289	0.379	0.251	-0.042	-0.106	<b>0.362</b>
	PS16	0.123	0.431	0.094	0.212	-0.001	-0.155	-0.074	<b>0.324</b>
	PS13	-0.017	0.473	0.278	0.382	0.021	0.076	-0.104	<b>0.322</b>
	PS8	0.139	0.332	0.170	0.073	0.002	0.029	-0.016	<b>0.320</b>
	PS3	0.170	0.563	0.111	0.309	0.038	-0.069	0.098	<b>0.318</b>
	PS12	0.066	0.444	0.170	0.368	0.036	0.038	-0.122	<b>0.317</b>
	PS14	0.029	0.352	0.130	0.343	-0.046	-0.060	-0.063	<b>0.289</b>
	PS5	0.388	0.438	0.243	0.332	-0.037	-0.054	0.087	<b>0.249</b>
	PS15	0.151	0.305	0.283	0.314	0.211	0.073	-0.132	<b>0.240</b>
	PS4	0.149	0.537	0.146	0.300	-0.169	-0.009	-0.046	<b>0.226</b>
	PS7	0.193	0.421	0.082	0.459	-0.059	-0.009	-0.131	<b>0.217</b>
	PS11	0.130	0.233	0.269	0.210	0.102	0.086	0.027	<b>0.211</b>
PS17	0.157	0.502	0.054	0.399	-0.127	0.046	-0.080	<b>0.195</b>	
PS18	0.050	0.436	0.165	0.500	-0.091	-0.015	-0.063	<b>0.193</b>	
PS9	0.220	0.428	0.040	0.368	-0.306	0.003	0.022	<b>0.176</b>	
Eigenvalues		30.47	6.47	5.45	4.97	3.11	2.86	2.42	2.29
% Variance Explained		31.10	6.60	5.56	5.07	3.17	2.92	2.47	2.34
Extraction Method: Maximum Likelihood; Rotation Method: Promax with Kaiser Normalization									

**Table 54: Convergent Validity Test for Essay 3**

Construct	Item	t-value (STERR)	Construct	Item	t-value (STERR)	Construct	Item	t-value (STERR)
Business Knowledge for Expert Power	BK1	25.31 (0.03)	Political Skill	PS2	23.27 (0.03)	Formal Interaction for Structural Power	SPFI4	18.36 (0.04)
	BK2	15.93 (0.05)		PS3	25.87 (0.03)		SPFI5	12.93 (0.06)
	BK3	20.69 (0.04)		PS4	14.43 (0.05)		SPFI6	20.07 (0.04)
	BK4	10.51 (0.06)		PS5	20.71 (0.04)	Role Importance for Structural Power	SPRI1	9.65 (0.07)
	BK5	13.38 (0.05)		PS6	10.51 (0.06)		SPRI2	19.78 (0.04)
	BK6	15.01 (0.05)		PS7	20.36 (0.04)		SPRI3	5.88 (0.10)
	BK7	14.29 (0.05)		PS8	7.53 (0.08)		SPRI4	8.84 (0.07)
	BK8	15.65 (0.05)		PS9	13.88 (0.05)	Reporting Level for Structural Power	SPRL1	5.17 (0.08)
	BK9	10.58 (0.06)		PS10	13.95 (0.05)		Commitment to IT Architecture Technical IT Initiatives	TA1
	BK10	16.53 (0.04)		PS11	6.59 (0.07)	TA2		33.55 (0.03)
External Connections for Prestige Power	PPE1	5.30 (0.09)		PS12	13.17 (0.05)	TA3	18.74 (0.04)	
	PPE2	3.41 (0.11)	PS13	16.17 (0.05)	Commitment to Application Development Technical IT Initiatives	TAD1	23.02 (0.04)	
	PPE3	3.25 (0.09)	PS14	15.29 (0.05)		TAD2	36.94 (0.02)	
	PPE4	4.71 (0.08)	PS15	13.08 (0.05)	TAD3	28.62 (0.03)		
Internal Connections for Prestige Power	PPI1	3.13 (0.11)	PS16	13.05 (0.05)	Commitment to IT Infrastructure Technical IT Initiatives	TIF1	4.46 (0.12)	
	PPI2	2.27 (0.11)	PS17	18.32 (0.04)		TIF2	4.89 (0.12)	
	PPI3	4.55 (0.10)	PS18	15.45 (0.05)		TIF3	3.92 (0.11)	
External Reputation for Prestige Power	PPRE1	20.09 (0.04)	Advice Impacting Executive Team	SA1	15.26 (0.05)	Commitment to IT Investments Technical IT Initiatives	TIV1	14.96 (0.05)
	PPRE2	14.48 (0.05)		SA2	18.53 (0.04)		TIV2	24.42 (0.03)
	PPRE3	22.43 (0.04)		SA3	17.13 (0.04)		TIV3	33.81 (0.03)
	PPRE4	10.67 (0.06)	Executive Team Following Advice	SF1	14.90 (0.05)	Commitment to IT Outsourcing Technical IT Initiatives	TO1	21.34 (0.04)
	PPRE5	12.59 (0.05)		SF2	19.00 (0.04)		TO2	20.45 (0.04)
	PPRE6	15.73 (0.05)	SF3	27.44 (0.03)	TO3		21.03 (0.04)	
	PPRE7	5.89 (0.10)	CIO Making	SM1	24.56 (0.03)	Technical Knowledge for Expert Power	TK1	17.29 (0.04)
PPRI1	27.19 (0.03)	SM2		18.32 (0.04)	TK2		21.68 (0.03)	

**Table 54: Convergent Validity Test for Essay 3**

Construct	Item	t-value (STERR)	Construct	Item	t-value (STERR)	Construct	Item	t-value (STERR)
Reputation for Prestige Power	PPRI2	31.16 (0.03)	Decisions	SM3	29.05 (0.03)		TK3	18.45 (0.04)
	PPRI3	12.51 (0.06)	CIO	SP1	22.26 (0.04)		TK4	14.99 (0.04)
	PPRI4	17.85 (0.04)	Persuading Executive Team	SP2	24.08 (0.03)		TK5	9.64 (0.06)
	PPRI5	19.41 (0.04)	Formal Interaction for Structural Power	SP3	19.98 (0.04)		TK6	14.83 (0.05)
	PPRI6	24.84 (0.03)		SPFI1	14.95 (0.05)		TK7	10.47 (0.06)
	PPRI7	19.25 (0.04)		SPFI2	19.92 (0.04)		TK8	13.87 (0.05)
Political Skill	PS1	13.88 (0.05)		SPFI3	16.22 (0.05)		TK9	20.79 (0.04)
							TK10	19.06 (0.04)

STERR = Standard Error

Following the evaluation of convergent validity, we evaluated discriminant validity. To do so, we entered all first-order factors in a correlation matrix. To assess discriminant validity, we compared cross factor correlations against the square root of the average variance extracted of each factor (Chin and Frye 1996). If the cross factor correlation exceeds the square root of the average variance extracted, there may be a lack of discriminant validity. The correlation matrix at the item level is presented in Appendix Q. Evaluating the correlation matrix indicates there aren't any significant cross factor correlations. The latent variable correlation matrixes shown in Tables 55 and 56 confirm there aren't any discriminant validity problems.

<b>Table 55: Discriminant Validity – Latent Variable Matrix for Essay 3</b>											
Construct	TIF	TIV	TAD	TA	TO	SP	SF	SM	SA	BK	TK
Commitment to IT Infrastructure Technical IT Initiatives (TIF)	<b>.93</b>										
Commitment to IT Investments Technical IT Initiatives (TIV)	.33	<b>.90</b>									
Commitment to Application Development Technical IT Initiatives (TAD)	.28	.71	<b>.93</b>								
Commitment to IT Architecture Technical Initiatives (TA)	.33	.77	.75	<b>.92</b>							
Commitment to IT Outsourcing Technical IT Initiatives (TO)	.27	.69	.72	.67	<b>.91</b>						
CIO Persuading Executive Team (SP)	.28	.58	.58	.59	.55	<b>.90</b>					
Executive Team Following Advice (SF)	.29	.57	.55	.51	.60	.68	<b>.87</b>				
CIO Making Decisions (SM)	.24	.55	.55	.52	.59	.61	.66	<b>.91</b>			
Advice Impacting Executive Team (SA)	.31	.52	.56	.56	.62	.62	.60	.61	<b>.91</b>		
Business Knowledge for Expert Power (BK)	.17	.41	.54	.50	.47	.52	.44	.45	.43	<b>.78</b>	
Technical Knowledge for Expert Power (TK)	.15	.42	.46	.50	.46	.42	.38	.47	.45	.69	<b>.77</b>

<b>Table 55: Discriminant Validity – Latent Variable Matrix for Essay 3</b>											
Construct	TIF	TIV	TAD	TA	TO	SP	SF	SM	SA	BK	TK
Internal Reputation for Prestige Power (PPRI)	.22	.48	.48	.45	.49	.60	.56	.48	.42	.55	.53
External Reputation for Prestige Power (PPRE)	.18	.44	.52	.45	.48	.57	.47	.42	.41	.52	.47
External Connections for Prestige Power (PPE)	-.14	.03	.22	.03	.15	.25	.28	.25	.16	.20	.10
Internal Connections for Prestige Power (PPI)	-.03	.06	.10	.11	.07	.18	.00	.13	.09	.19	.25
Formal Interaction for Structural Power (SPFI)	.12	.42	.46	.38	.47	.53	.54	.46	.46	.47	.37
Role Importance for Structural Power (SPRI)	.24	.56	.56	.61	.59	.58	.49	.50	.57	.55	.53
Reporting Level for Structural Power (SPRL)	.17	.22	.09	.15	.08	.11	.18	.19	.10	.15	.08
Political Skill (PS)	.13	.35	.41	.39	.40	.50	.38	.32	.42	.48	.39
Common Method Bias Variable (CMB)	.08	.18	.16	.10	.16	.24	.09	.10	.10	.23	.17

Diagonals = square root AVE; Off-diagonals = correlations

<b>Table 55 (cont): Discriminant Validity – Latent Variable Matrix for Essay 3</b>										
Construct	PPRI	PPRE	PPE	PPI	SPFI	SPRI	SPRL	PS	CMB	
Internal Reputation for Prestige Power (PPRI)	<b>.84</b>									
External Reputation for Prestige Power (PPRE)	.73	<b>.81</b>								
External Connections for Prestige Power (PPE)	.14	.24	<b>.86</b>							
Internal Connections for Prestige Power (PPI)	.17	.18	.40	<b>.82</b>						
Formal Interaction for Structural Power (SPFI)	.52	.46	.33	.08	<b>.83</b>					
Role Importance for Structural Power (SPRI)	.60	.65	.07	.11	.48	<b>.78</b>				
Reporting Level for Structural Power (SPRL)	.12	.07	.04	-.08	.42	.13	<b>1.00</b>			
Political Skill (PS)	.58	.68	.21	.18	.48	.64	.07	<b>.69</b>		
Common Method Bias Variable (CMB)	.41	.34	.10	.12	.34	.27	.00	.54	<b>1.00</b>	

Diagonals = square root AVE; Off-diagonals = correlations

<b>Table 56: Discriminant Validity – Construct-Level Latent Variable Matrix for Essay 3</b>							
Construct	T	S	EP	PP	SP	PS	CMB
Technical IT Initiatives (T)	<b>.78</b>						
Strategic IT Initiatives (S)	.74	<b>.79</b>					
Expert Power (EP)	.55	.57	<b>.71</b>				
Prestige Power (PP)	.08	.25	.23	<b>.61</b>			

<b>Table 56: Discriminant Validity – Construct-Level Latent Variable Matrix for Essay 3</b>							
Construct	T	S	EP	PP	SP	PS	CMB
Structural Power (SP)	.58	.67	.56	.23	<b>.90</b>		
Political Skill (PS)	.41	.48	.47	.23	.59	<b>.69</b>	
Common Method Bias Variable (CMB)	.17	.16	.22	.13	.35	.54	<b>1.00</b>
Diagonals = square root AVE; Off-diagonals = correlations							

### Non-Response Bias

We used wave analysis to assess the potential non-respondent bias in our survey.

In wave analyses, the late respondents are treated as a proxy for non-respondents (Armstrong and Overton 1977). For our analysis, we grouped the responding CIOs into early respondents, those CIOs who responded within 24 hours of the e-mail request from *Research Now*, and respondents who took more than 24 hours to respond (i.e. late respondents). We then compared these two groups by firm size and firm age. We dummy coded the firm revenue for the firm size (where <\$20 million = 1, \$20-50 million = 2, \$51-100 million = 3, \$101-500 million = 4, \$501-1000 million = 5, and >\$1000 million = 6) and the number of years since the firm was founded for the firm age. As Table 57 indicates, there are no significant differences between early and late respondents. Based on these findings, we concluded response bias did not pose a substantial threat to this study.

<b>Table 57: Non-Response Bias Analysis Results for Essay 3</b>							
Variable	Respondent	N	Mean	Standard Deviation	F-Value	Degrees of Freedom	Significance
Firm Size	Early	76	3.97	1.57	0.013	121	0.911
	Late	47	4.09	1.56			
Firm Age	Early	71	59.86	43.77	0.075	112	0.785
	Late	43	51.98	44.02			

### **Assessment of Common Method Bias Threat**

Like all behavioral research studies, common method bias threatens the validity of our study (Podsakoff et al. 2003). Following the techniques described by Podsakoff et al. (2003), we attempted to control for common method bias through the design of our study's procedures and through statistical controls. We describe these procedures in the following sections.

### **Design of the Study's Procedures**

Procedural remedies help control common method bias by identifying the connection between the measures of the predictor and dependent variables and then eliminating or minimizing these common characteristics by carefully designing the study (Podsakoff et al. 2003). We employed two procedural remedies to try to control the influence of common method bias: psychological separation of measurement and protecting respondent anonymity/reducing evaluation apprehension.

We used two methods of psychological separation of measurement to make it appear our measurement of the power (predictor) variables was not connected with or related to the measurement of the commitment to strategic and technical IT initiatives (criterion or dependent) variables (Podsakoff et al. 2003). First, our cover letter (the first page of the survey, as shown in Appendix R) referred to the impact of the respondent on the strategic and technical decisions of the firm without any reference to the corresponding power of the respondent. This "cover story" was designed to ensure respondents did not try to mentally connect power and influence over the executive team commitment to IT initiatives. Second, we also physically separated the measures with questions from another study. These questions were unrelated to the power and influence

concepts (e.g. a number of items were designed to capture the level of IT-business strategic alignment in the CIO's firm) and were inserted between the power and influence measures as an additional way of providing a psychological disconnect between the predictor and dependent variables.

Our second procedural remedy is protecting the anonymity of the respondents and reducing evaluation apprehension. By using a third party to administer the survey, we never had access to the respondents' names or company names. Instead, each respondent had a computer-generated response ID that the third party used to track the individuals who completed the survey. The research team only had access to these computer-generated response IDs and not the names of the individuals associated with these IDs. The research team provided the third party with the list of response IDs but did not transmit the responses. Therefore, the respondent names and responses were never electronically associated. We also added a clause in our cover letter that assured the respondent that no answers would be linked to them by anybody on the research team; this was added as a means of assuring the respondents that they could answer the questions honestly.

### **Statistical Controls**

Following the recommended guidelines established by Podsakoff et al. (2003), we conducted two types of analyses to diagnose the extent to which common method bias may be a problem. First, we conducted a Harman one-factor test (Harman 1976; Malhotra et al. 2006). Our results extracted thirteen factors from the data, which corresponded to the latent variables in our study. The factors accounted for 70.42 percent of the variance



with the first factor accounting for 34.97 percent. Since no single factor accounted for a majority of the covariance, this suggests common method bias might not pose a severe threat to the validity of our study (Harman 1976). Second, we used Lindell and Whitney's (2001) marker variable test. This technique uses a marker variable (i.e. a theoretically unrelated variable, which was our CMB variable – "I am an optimist") to adjust the correlations of the model's core constructs (Lindell and Whitney 2001). Since we did not find high correlations between the "common method bias" variable and any of the model's core constructs (the highest correlation was 0.54 with political skill as shown in Table 56, which could be due to the fact this variable was on the same page of the survey as the political skill items), we concluded common method bias was not particularly problematic in our study.

### **Hypothesis Testing**

We used Multivariate General Linear Modeling (GLM) in SPSS 15.0 for Windows Grad Pack (LEADTOOLS 2006) to analyze our model's main effects (H1-H3) and moderators (H4-H6) using procedures and test statistics recommended in prior research (Carte and Russell 2003; Cohen et al. 2003). Using GLM is appropriate because our two dependent variables are related and their similarities need to be controlled for in the analysis (Hair et al. 2006). Additionally, many SEM packages do not support the analysis of moderators (Carte and Russell 2003; Gerow et al. 2010). As such, we determined Multivariate GLM was the most appropriate analysis technique<sup>47</sup>. Once we

---

<sup>47</sup> We also analyzed the data using Univariate GLM as shown in Appendix S to verify that we needed to control for the similarities in the dependent variables. Due to the different results in the univariate versus multivariate results (indicating the univariate analysis was not accurately capturing the relationships in question), we determined Multivariate GLM was most appropriate for our analysis.

removed the outliers, we mean-centered the independent variables to avoid multicollinearity issues (Aiken and West 1991). We also dichotomized<sup>48</sup> the political skill variable where half the sample was low and half high in political skill<sup>49</sup> (MacCallum et al. 2002). For the main effects model, we specified the mean-centered political skill and structural, expert, and prestige power as the terms included in the model. For the moderator analysis, we specified the categorical political skill and structural, expert, and prestige power terms as well as the categorical political skill interaction terms (e.g. categorical political skill \* mean-centered structural power). For both Multivariate GLM analyses, we also displayed the parameter estimates in order to capture the Beta coefficients.

The test for homogeneity of variance on the error term was insignificant for structural ( $F_{17, 107} = 1.53$  and  $0.92$ ), expert ( $F_{19, 104} = 1.37$  and  $0.99$ ), and prestige power ( $F_{19, 104} = 1.28$  and  $1.04$ ) for both strategic and technical directives, respectively; this means the equal variance assumption was not rejected (Cohen et al. 2003). Box's M statistic, a sensitivity test of homogeneity of variance/covariance matrices, was insignificant, indicating the data was homoscedastic (Tabachnick and Fidell 2007).

---

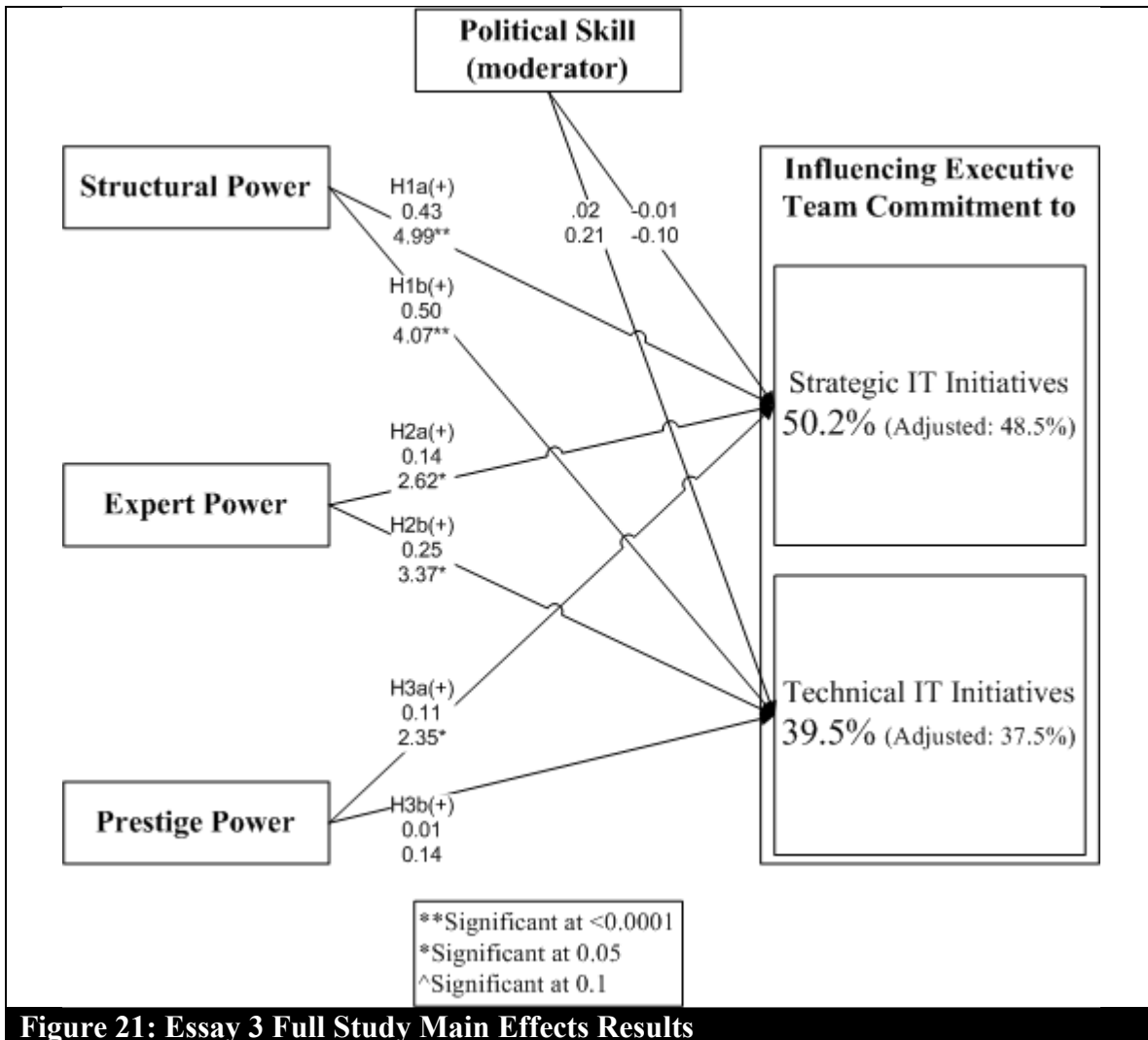
<sup>48</sup> Dichotomization is a commonly used practice for independent variables. MacCallum et al. (2002) recommend continuous variables where possible. In particular, a dichotomization strategy can result in a loss of information regarding individual differences (the cutoff will naturally break apart individuals that are next to each other in the normal distribution without cause) and can generate inaccurate statistical results (e.g. change in main effects or interactions; risk of overlooking nonlinear effects; an eroding strength of the association between the variables; and a reduction in variance). However, some of the valid justifications discussed by MacCallum et al. (2002) include previous research practices, simplification, examining moderator effects, categorizing skewed data, clinically significant cutoffs, and improving statistical power. In particular, examining moderator effects and improving statistical power are relevant in this study. Therefore, we believe this warrants a dichotomization.

<sup>49</sup> Political skill ranged from 53 to 90 across the 127 respondents. The mid-point between the high and low values is 71.5 and each group should contain 63.5 respondents. When the sample is split into groups of 63 and 64, the low political skill group contains values ranging from 53 to 72 and the high political skill group contains values ranging from 73 to 90.

Finally, the Chi-squared difference analysis was significant, indicating a lack of co-linearity. Since these tests did not suggest any of our assumptions were invalid, we proceeded with our analyses. The results are discussed in the following sections.

### **Main Effects Analysis**

We tested the main effects of structural (H1a and H1b), expert (H2a and H2b), and prestige (H3a and H3b) power on the influence over executive team commitment to strategic and technical IT initiatives. Our general linear model results in Figure 21 show structural power (H1a:  $\beta = 0.43$ ,  $p < 0.0001$ ; H1b:  $\beta = 0.50$ ,  $p < 0.0001$ ) and expert power (H2a:  $\beta = 0.14$ ,  $p < 0.05$ ; H2b:  $\beta = 0.25$ ,  $p < 0.05$ ) are significantly related to executive team commitment to strategic and technical IT initiatives. Prestige power is significantly related to executive team commitment to strategic IT initiatives ( $\beta = 0.11$ ,  $p < 0.05$ ) but not significantly related to technical IT initiatives ( $\beta = 0.01$ , n.s.). Additionally, we did not expect to find any direct effects from political skill to our dependent variables. Therefore, H1a-H3a are supported while H3b is not as illustrated in Figure 21 (this figure also includes the direct effect analysis of political skill to the commitment to technical and strategic IT initiatives). The  $R^2$  for the strategic and technical initiatives components are 50.2% and 39.5%, respectively. For complete details on the analyses, please see Appendix S.



**Figure 21: Essay 3 Full Study Main Effects Results**

### Moderation Effects Analysis

We proposed political skill was a critical moderator between power and the CIO's influence over executive team commitment to strategic and technical initiatives (H4a-H6b). Our general linear model results in Figure 22 indicate political skill is a significant moderator in all cases except between prestige power and technical IT initiatives (H6b). Thus, H4a-H6a are supported while H6b is not supported. The  $R^2$  for the strategic and technical initiatives components including the moderation effects are 53.1% and 46.5%,

respectively. The change in  $R^2$  from the main effects analysis to the moderator analysis is 2.9% and 7.0% (Adjusted Change = 1.6% and 5.6%), respectively for strategic and technical IT initiatives.

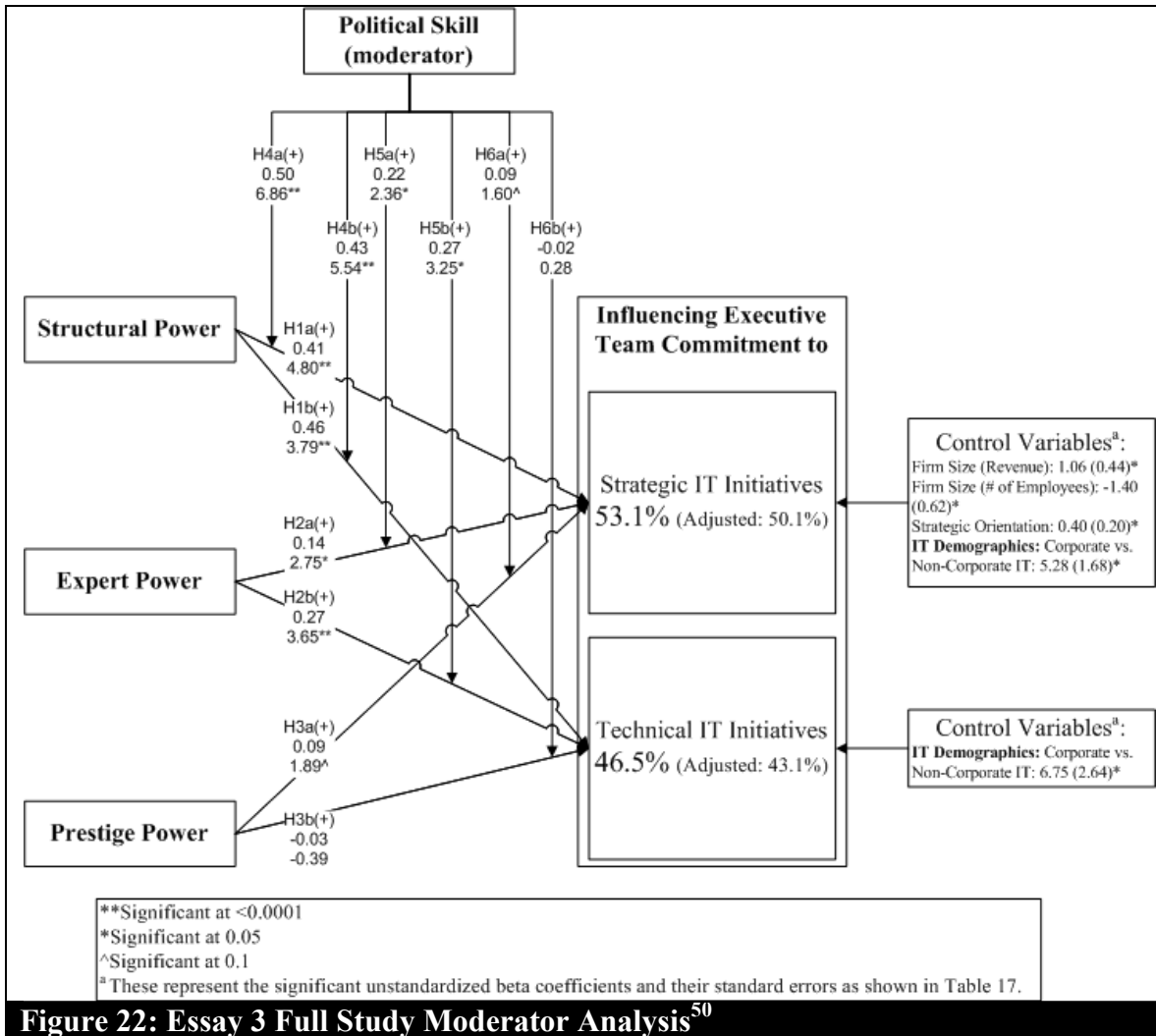


Table 58 presents a summary of our hypotheses testing.

<b>Table 58: Summary of Hypothesis Testing for Essay 3</b>	
<b>Hypothesis</b>	<b>Results</b>
H1a- CIOs with higher levels of structural power will report a greater influence over executive team commitment to strategic	Supported

<sup>50</sup> The control variables were not included in the calculation of the  $R^2$  values. The inclusion of the control variables in the figure is only for illustrative purposes for the overall model analysis.

<b>Table 58: Summary of Hypothesis Testing for Essay 3</b>	
<b>Hypothesis</b>	<b>Results</b>
IT initiatives.	
H1b- CIOs with higher levels of structural power will report a greater influence over executive team commitment to technical IT initiatives.	Supported
H2a- CIOs with higher levels of expert power will report a greater influence over executive team commitment to strategic IT initiatives.	Supported
H2b- CIOs with higher levels of expert power will report a greater influence over executive team commitment to technical IT initiatives.	Supported
H3a- CIOs with higher levels of prestige power will report a greater influence over executive team commitment to strategic IT initiatives.	Supported
H3b- CIOs with higher levels of prestige power will report a greater influence over executive team commitment to technical IT initiatives.	Not Supported
H4a- CIOs with political skill will enhance (positively moderate) the relationship between structural power and influencing executive team commitment to strategic IT initiatives.	Supported
H4b- CIOs with political skill will enhance (positively moderate) the relationship between structural power and influencing executive team commitment to technical IT initiatives.	Supported
H5a- CIOs with political skill will enhance (positively moderate) the relationship between expert power and influencing executive team commitment to strategic IT initiatives.	Supported
H5b- CIOs with political skill will enhance (positively moderate) the relationship between expert power and influencing executive team commitment to technical IT initiatives.	Supported
H6a- CIOs with political skill will enhance (positively moderate) the relationship between prestige power and influencing executive team commitment to strategic IT initiatives.	Supported
H6b- CIOs with political skill will enhance (positively moderate) the relationship between prestige power and influencing executive team commitment to technical IT initiatives.	Not Supported

## Control Variable Results

We then analyzed the influence of the control variables on our models.

Specifically, we added the 14 variables (see Table 50) to the main effects model. This resulted in significant relationships for firm size (revenue and # of employees), strategic orientation, and corporate vs. non-corporate IT with the Strategic IT Initiatives dependent variable and corporate vs. non-corporate IT with the Technical IT Initiatives dependent variable as shown in Table 59 and Figure 22. This suggests these three variables will explain some of the variance in the executive team's commitment to strategic and technical initiatives, in addition to the variance explained by the different types of power.

**Table 59: Control Variable Results for Essay 3**

Control Variable	Unstandardized Beta Coefficient (Standard Error) for the Dependent Variable	
	Strategic IT Initiatives	Technical IT Initiatives
Environmental Turbulence	-0.23 (0.31)	-0.47 (0.50)
Firm Size (Revenue)	1.06 (0.44)*	-0.36 (0.70)
Firm Size (# of Employees)	-1.40 (0.62)*	0.97 (.97)
Governance	0.36 (0.24)	0.65 (0.38)
Strategic Orientation	0.40 (0.20)*	0.53 (0.31)
IT Demographics		
IT Size (# of Employees)	0.39 (0.54)	-1.04 (0.86)
IT Size (Spending as % of Revenues)	0.40 (0.38)	0.34 (0.60)
IT Department Age	-0.04 (0.04)	-0.05 (0.06)
Corporate vs. Non-Corporate IT	5.28 (1.68)*	6.75 (2.64)*
CIO Demographics		
Tenure as a CIO	-0.53 (0.56)	0.12 (0.88)
Tenure in IT	-0.23 (0.82)	-0.51 (1.29)
Tenure in Current Firm	-0.16 (0.48)	-0.98 (0.75)
CIO Age	-0.17 (0.36)	0.27 (0.56)
CIO Gender	1.00 (1.52)	-0.82 (2.40)
*significant at 0.05		

## **DISCUSSION**

We began this essay with CIOs considering how they can obtain executive team commitment to IT initiatives. Due to the unstructured and ambiguous nature of IT initiatives and the political environment inherent in every firm, CIOs need to consider their position in the hierarchy, their business and technical knowledge, the connections they've established, and their political abilities. As such, we developed our research question, "*What are attributes of CIOs who successfully build executive team commitment to IT initiatives?*", to determine whether reporting structure (i.e. structural power), business and technical knowledge (i.e. expert power), social networking (i.e. prestige power), and political abilities (i.e. political skill) are important attributes associated with the CIO's ability to gain executive team commitment to IT initiatives. We addressed this question in this study by developing and empirically testing a model where power and political skill impact the CIO's influence over the executive team's commitment to strategic and technical IT initiatives. The key findings, implications for theory and practice, and limitations are discussed in the following sections.

### **Key Findings**

There are two key findings from this study. First, we found support for the Power-Dependence Perspective in that the executive team depends on the CIO's knowledge, connections, and position on the executive team to commit to strategic IT initiatives. We also found the CIO's knowledge and position are important for influencing the executive team's commitment to technical IT initiatives, whereas the CIO's connections were not significantly related to the decisions surrounding these initiatives. This suggests structural (i.e. position), expert (i.e. knowledge), and prestige (i.e. connections) power are



all attributes the CIO can leverage to influence executive team commitment to IT initiatives.

The second major finding of this study is that CIOs may need to engage in political activity to enhance their power and, in turn, influence the executive team's commitment to IT initiatives. This suggests the Political Perspective is valuable for examining the relationship between the CIO's power and the CIO's influence over the executive team's commitment to IT initiatives. Specifically, our results show that CIOs with higher levels of political skill, combined with higher structural, expert, and prestige power, are more likely to influence their executive teams' commitment to strategic IT initiatives. Additionally, CIOs with higher levels of political skill, combined with higher structural and expert power, are more likely to influence their executive teams' commitment to technical IT initiatives.

### **Implications for Theory and Practice**

As a response to the need for empirical research that examines the CIO's influence over the executive team's commitment to IT initiatives, this study offers several theoretical and practical contributions. First, we propose two new theoretical constructs, CIO influence over executive team commitment to strategic IT initiatives and CIO influence over executive team commitment to technical IT initiatives, to examine the impact of CIO power. We applied the existing IT management and IT decision-making research to develop the measurement items of CIO influence over executive team commitment to IT initiatives. The fifteen-item measure of CIO influence over executive team commitment to technical IT initiatives and the twelve-item measure of CIO influence over executive team commitment to strategic IT initiatives have been validated by our data. This offers a useful tool for future

researchers to consider the influence the CIO has on the executive team's commitment to IT initiatives.

Second, the research model and results support the Power-Dependence Perspective as a valuable theoretical lens for examining the impact of power on the CIO's influence over the executive team's commitment to IT initiatives. In particular, this study facilitates a greater understanding of the motivational investment and availability components of the Power-Dependence Perspective in the context of the relationship between a CIO and the executive team. We found expert power, and possibly prestige power, captured motivational investment in that executive teams are more likely to commit to IT initiatives when they depend on the knowledge and connections of their CIOs. We also found structural power captured the availability component in that executive teams were more likely to commit to IT initiatives when the CIO was part of the executive team.

For the relationship between structural power and IT initiatives, the results suggest CIOs who are positioned on the executive team have greater influence over both strategic and technical IT initiatives. To gain a better understanding of these relationships, future research should consider other factors that may provide further explanations for why executive teams depend, or don't depend, on CIOs who are on the executive team. For example, it may be interesting to see how outsourcing impacts the CIO's influence on the executive team's commitment to IT initiatives. Outsourcing may increase the availability of alternative sources of IT knowledge and connections such that the CIO's influence decreases. Alternatively, the role of IT in the firm may change the

motivational investment of the executive team in the CIO. For firms that only use IT to support their business processes, the executive team may be less inclined to commit to IT initiatives such that the CIO will have little influence. For firms using IT more strategically, the CIO may have much more influence over the executive team's commitment to IT initiatives. Therefore, we suggest adding outsourcing as another measure of availability and the role of IT as another measure of motivational investment.

Our results suggest expert power doesn't influence the executive team's commitment to strategic IT initiatives as much as it does technical IT initiatives. This may mean CIOs need more than just technical and business knowledge to have a greater influence over the executive team's commitment to strategic IT initiatives. For example, they may need more knowledge about the competitive environment or customer buying habits to more effectively influence the executive team. Therefore, future researchers should consider including competitive knowledge as an additional dimension of expert power.

The results also indicate the combination of business and technical knowledge has a strong influence over the executive team's commitment to technical IT initiatives. This suggests having both business and technical knowledge may improve the CIO's ability to communicate technical knowledge with the business in a language they understand. This could further increase the executive team's dependence on the CIO. Therefore, researchers should consider measuring communication skills as a mediating variable between expert power and the CIO's influence over the executive team's commitment to IT initiatives.

Unlike structural and expert power, the relationships between prestige power and IT initiatives were not significant at 0.05. Due to the inconclusive findings for these hypotheses, future research is needed to explore these relationships further. Potentially, future researchers may need to measure the executive team's perceptions of the CIO's connections, the uncertainty surrounding strategic IT initiatives, and the executive team's propensity to outsource the firm's technical IT initiatives if the CIO is already leveraging these external sources.

In terms of practical implications, our research offers additional insights into what attributes a CIO can use to successfully build executive team commitment to IT initiatives. First, CIOs often don't have control over their position on the executive team. However, this research suggests CIOs with direct access to the executive team and CEO have a greater influence over the executive team's commitment to IT initiatives. This suggests CIOs should make a case to their CEOs about the importance of being on the executive team as a means of giving IT a more central role in the organization. Through this position power, they may be able to receive additional resources that are necessary to implement strategic and technical IT decisions made by the executive team.

CIOs should also strive to have a thorough understanding of technology and the company's business strategies and processes. CIOs need to probe the environment for relevant IT-related expertise and also have a deep understanding of the needs of, and resources available from, the company. This means CIOs should not only be familiar with the technology available, but they should also learn to speak the language of the business so they can explain to the business how technology can improve the business

and affect its strategies. Additionally, business and technical knowledge may be even more important when a CIO is trying to influence executive team commitment to technical IT initiatives. For example, many executive team members are not technically savvy. To properly influence these individuals, it is even more important to speak in a language these individuals understand so they can be informed about technical IT initiatives.

CIOs should also focus on improving their reputation and increasing the number of contacts they have with executive team members inside and outside the company when it comes to influencing the executive teams' commitment to strategic IT initiatives. This means CIOs should ensure they are valuable assets to their companies and that their personal qualities, ideas, and opinions are respected by those around them. In addition to developing a strong reputation, CIOs should also develop connections with powerful people. Through these connections, the CIO can gain support internally and also have external resources that may be able to provide recommendations on IT initiatives (e.g. the CIO may be able to get advice on which IT solutions may best solve the company's issues). In turn, the CIO's reputation and connections will help him influence the executive team's commitment to specific strategic IT initiatives. However, our results indicate connections to important people inside and outside the organization may reduce executive teams' dependence upon CIOs regarding technical IT decisions. Therefore, CIOs should be cautious about referencing their connections when trying to influence their executive teams' commitment to technical IT initiatives.

Third, our model and results support the Political Perspective is beneficial for

further explaining the relationship between power and the CIO's influence of the executive team's commitment to IT initiatives. Political behavior tends to have negative connotations in that the most powerful person is pushing his choices on others. However, this study indicates CIOs with political skill can enhance their structural, expert, and prestige power such that the executive team's commitment to IT initiatives is more likely. Since this study shows a CIO has an important role to play in the political activity of a firm, future research should consider other ways in which this political perspective of IT may impact the organization. Considering a similar peer influence scenario, it may be interesting to see whether other IT employees such as program managers use political skill to enhance the power they have over other departments to gather the commitment they need (i.e. getting resources and time commitments).

Based on the Political Perspective, our results indicate the CIO may be able to use political skill to reduce the appearance of conflict in the organization, particularly when the CIO has a position on the executive team. This suggests researchers should consider measuring conflict between the CIO and executive team. Our results indicate conflict should be reduced the most when the CIO is on the executive team and slightly less reduced if the CIO has business and technical knowledge.

Although conflict may also be reduced regarding expert and prestige power, our results indicated political skill had a weaker moderating effect. Instead, it may be possible CIOs are more reluctant to use their political skill when they already have expert or prestige power in that they may believe their business and technical skills should be sufficient to influence the executive team. This desire or interest to participate in political activities is referred to as political will (Ammeter et al. 2002; Perrewe and Nelson 2004). Since CIOs

may not always choose to use their political skills, future researchers should consider adding the political will of CIOs to the model to complement political skill.

Concerning practical implications, our research indicates political skill may be another important attribute a CIO may need to possess. While structural power is largely out of the CIO's control, this research suggests CIOs may be able to leverage their political abilities to enhance the level of structural power they are provided by the CEO. In particular, political skill may allow CIOs to more effectively use "softer" tactics that establish a sense of similarity with other executive team members and break down barriers that cause other members to view the CIO as "less equal". In turn, this may give them more influence over the executive team's commitment to IT initiatives.

However, CIOs already have control over the knowledge and connections they acquire, but this research suggests CIOs may be able to further bolster their expert and prestige power by also leveraging their political abilities. In particular, CIOs should try to understand and communicate often with executive team members inside and outside the firm. In so doing, they should seek to develop a good rapport with these individuals. Through these relationships, CIOs may gather further knowledge about the business and technology and may develop stronger relationships with important people.

Fourth and finally, we examined the CIO's power base and how this impacts the executive team from a peer-to-peer perspective. Even though we restricted our study to only one non-CEO executive (i.e. the CIO) and the executive team's commitment to one particular area of the business (i.e. the IT department), these measures can be adapted to measure the strategic influence of other non-CEO executives that struggle with achieving the same level of influence as the more acceptable "primary value activities" like the CFO

and COO (Huselid 2011; Porter 1985). For example, other support value positions that may benefit from similar research include the Chief Human Resources Officer (CHRO), the Chief Procurement Officer (CPO), or the Chief Research Officer (CRO).

The implications from our research results are presented in Table 60.

### **Limitations & Suggestions for Future Research**

Like all studies, our work is not without limitations. First, we only surveyed CIOs. Studies often cite their use of single respondents as problematic due to common source bias (e.g. Armstrong and Sambamurthy 1999; Jarvenpaa and Ives 1993; Kearns and Sabherwal 2006; Lai et al. 2009). Although this concern can be addressed by using multiple respondents in the same firm (Teo and King 1996), collecting data from two sources at the executive level is quite difficult (Chan et al. 1997) and could compromise the anonymity of the questionnaire (Kearns and Sabherwal 2006). Additionally, subjectivity and measurement error are still a possibility even for matched pairs (Tallon 2007b). While previous research indicates surveying matched pairs of CIOs and CEOs is superior to surveying single respondents because the researcher can capture both sides of the dyad and mitigate some of the common method bias issues (Bassellier and Benbasat 2004; Croteau and Raymond 2004; Kearns and Sabherwal 2006), we chose to survey only a single respondent as a means of ensuring anonymity and, therefore, collecting more honest responses to the questions. However, we acknowledge direct questioning about sensitive issues like power and influence can be difficult, so we recommend the use of archival data in future research to capture a more unbiased measure of these variables (Finkelstein 1992; Pfeffer and Salancik 1974).



<b>Table 60: Implications for Research and Practice for Essay 3</b>				
	<b>Research</b>		<b>Practice</b>	
	<b>Strategic IT Initiatives</b>	<b>Technical IT Initiatives</b>	<b>Strategic IT Initiatives</b>	<b>Technical IT Initiatives</b>
<b>Structural Power</b>	<p><i>Outsourcing</i> may increase the availability of alternative sources of IT knowledge and connections such that the CIO's influence decreases.</p> <p><i>IT's role</i> as a strategic or support function may increase or decrease the CIO's influence.</p>		<p>CIOs should make a case to their CEOs about the importance of being on the executive team as a means of giving IT a more central role in the organization.</p>	
<b>Expert Power</b>	<p>Technical and business knowledge by themselves don't have as great an impact on strategic IT initiatives as technical ones. Therefore, <i>competitive knowledge</i> is another dimension of expert power that may impact the CIO's influence over the executive team's commitment to strategic IT initiatives.</p>	<p>Expert power may improve the CIO's ability to communicate technical terms in business language. Therefore, future researchers should consider adding <i>communication skills</i> as a mediator between expert power and the CIO's influence over executive team commitment to IT initiatives.</p>	<p>CIOs should understand the technology that is available and the needs of, and resources available from, the business.</p>	<p>CIOs should learn to speak in business language so they can communicate technical terms in a way that promotes executive team understanding and, in turn, commitment to technical IT initiatives.</p>
<b>Structural Power + Political Skill</b>	<p>Political skill may help reduce the appearance of <i>conflict</i> in the organization.</p>		<p>Political skill may allow CIOs to more effectively use "softer" tactics that establish a sense of similarity with other executive team members and break down barriers that cause other members to view the CIO as "less equal".</p>	
<b>Expert Power + Political Skill</b>	<p>CIOs may choose not to exercise their political skill (i.e. <i>political will</i>).</p>		<p>CIOs should try to understand and communicate often with executive team members inside and outside the firm so they can develop a good rapport with these individuals, gather additional knowledge about the business and technology, and develop stronger relationships with important people.</p>	
<b>Prestige Power (+ Political Skill)</b>	<p>Due to the inconclusive findings for the prestige power hypotheses, future research is needed to explore these relationships.</p>			

Second, we did not capture the power levels of other executive team members (e.g. we don't know if or how many members report directly to the CEO). While some CIOs may have a high-level of power compared to other CIOs, they may have relatively little power in their organization (Greve and Mitsuhashi 2007). For example, a CIO at firm A may report directly to the CEO, just like a CIO at firm B, but firm A might have a flat organizational structure such that 10-20 people may report directly to the CEO while only the core functions may report to the CEO at firm B (e.g. the CFO and COO). This may result in the CIO at firm A not having the same influence over executive team decisions as the CIO at firm B. We attempted to account for this situation by including the governance structure as a control variable; however, future research should consider collecting power levels of other executive team members to calculate the CIO's relative power.

Third, several other variables may be useful in determining a CIO's prestige power. In our study, we asked respondents to identify how often they associated with important others (executive teams and executive team members) within and outside their firm. We also captured the CIO's reputation among these people. However, these items only captured the structural dimension of these relationships (i.e. the network of relations) and did not account for the relational dimension (e.g. the kinds of personal relationships that have been developed with these individuals) or cognitive dimension (e.g. the understanding these people share) (Nahapiet and Ghoshal 1998). To fully capture the CIO's prestige power, a full social network analysis or name generation is advisable (Burkhardt and Brass 1990; Marsden 1990); however, this was outside the

scope of this research due to the length of the survey and the risk of the CIO divulging confidential or sensitive information.

Fourth, a cross-sectional survey is limited in that we cannot fully establish causality between the CIO's level of power and influence on the executive team's commitment to IT initiatives. While we tested for common method bias and didn't detect any serious problems with it in our study, it may be helpful for future researchers to consider some carefully designed longitudinal studies. First, it would be useful to compare the influence a CIO has over the executive team when the CIO reported to the CFO versus directly reporting to the CEO (i.e. structural power). Second, future research could look at the impact of training or mentoring on the business and technical knowledge of the CIO where the study could compare the before-training and after-training influence the CIO has on the executive team (i.e. expert power). Third, the researcher could expose CIOs to networking groups and compare the influence these CIOs have over their executive teams before making connections to the influence after these associations are established (i.e. prestige power). Finally, future research could also look at the impact of political skill training, which could also include mentoring.

Fifth, although our response rate is comparable with other CIO-level studies (Oh and Pinsonneault 2007; Preston et al. 2006), it still introduces the issue of non-response bias. Even though we did not find any significant differences between responding and non-responding firms in our wave analysis, we acknowledge respondent bias may still exist. For example, CIOs at more established firms or at firms with higher IT budgets

may be more likely to answer the survey (Preston et al. 2008). However, our results showed that younger and smaller firms were also included in the sample.

Finally, like many CIO-level studies (e.g. Preston et al. 2008), it was difficult to completely randomize the sampling frame. While we had to rely on a third party source to collect our data, we ensured the validity of our respondents by adding a screening question and verifying the demographic information provided by the marketing company. By using this sampling approach, we were able to capture a much larger sample of CIOs and were able to ensure we captured multiple industries (evenly split among manufacturing, service, and "other") and multiple firm sizes (similar percentages of small, medium, medium-to-large, and large).

## **CONCLUSION**

In this essay, we investigated the relationship between CIOs' attributes and their influence over the executive team's commitment to strategic and technical IT initiatives. We found a direct report to the CEO, formal involvement in executive team activities, and establishing role importance within the firm (i.e. structural power) were significantly related to the CIOs' influence over the executive team's commitment to IT initiatives. Our results also indicate CIOs with a greater understanding of business and technology may be more likely to influence the executive team to commit to their strategic and technical initiatives (i.e. expert power). We also found CIOs with good reputations and connections with executive team members inside and outside the company also tend to have a greater influence over the executive team's commitment to strategic IT decisions (i.e. prestige power). Additionally, our results demonstrate that CIOs with political skill may be able to enhance their structural, expert, and prestige power such that they have

additional influence over the executive team's commitment to IT initiatives. Hence, this study addresses how CIOs can leverage different types of power and their political skill to successfully influence the executive team's commitment to IT initiatives.

## **APPENDICES**

## Appendix A – Nuanced Definitions of Alignment in the Extant Literature

Legend: BusS = Business Strategy

ITS = IT Strategy

BusIP = Business Infrastructure & Processes

ITIP = IT Infrastructure & Processes

Study	Term(s)	Definition	Domain				Dimension
			BusS	ITS	BusIP	ITIP	
(King 1978)	link	link "the organization's 'strategy set' to an MIS 'strategy set'" pp. 27	x	x			intellectual
(Henderson and Sifonis 1988)	consistency, linking	"link between IS planning and strategic business planning" pp. 188	x	x			intellectual
(Main and Short 1989)	alignment	"alignment of the firm's key business strategies and the IT infrastructure and work processes, the latter including: the company's IT architecture, the underlying work production processes for managing and adapting the IT infrastructure, and the IT human resource skill base" pp. 471	x			x	cross-domain
(Karimi and Konsynski 1991)	alignment, linkage	"the firm's strategy and its information-processing requirements must be in alignment with the firm's organizational structure and information-processing capabilities" pp. 10	x		x	x	cross-domain
(Baets 1992)	strategic alignment	"linkage of the IS strategy with business strategy" pp. 205	x	x			intellectual
(Lee and Leifer 1992)	alignment, integration, linking	"alignment between IS structures and emerging management structures based upon the linking concept of information sharing" pp. 28			x	x	operational
(Luftman et al. 1993)	strategic alignment	"reflects the view that business success depends on the harmony of business strategy, information technology strategy, organizational infrastructure and processes, and I/T infrastructure and processes" pp. 206	x	x	x	x	cross-domain
(Sabherwal and Kirs 1994)	alignment	"align the IT strategy with organizational strategy" pp. 304	x	x			intellectual
(Jordan and Tricker 1995)	alignment	"aligning the information strategy with the organizational structure" pp. 377		x	x		cross-domain
(Baets 1996)	IS strategy alignment	"collaborative process between the business strategy, the business organization, the IS infrastructure, and the IT strategy" pp. 156	x	x	x	x	cross-domain

Study	Term(s)	Definition	Domain				Dimension
			BusS	ITS	BusIP	ITIP	
(Chan et al. 1997)	strategic alignment	"the alignment between business unit strategic orientation and IS strategic orientation" pp. 132	x	x			intellectual
(Broadbent et al. 1999b)	alignment	"alignment of IT infrastructure with business strategy" pp. 163	x			x	cross-domain
(Brown 1999)	alignment, coordination, collaboration	"coordinating activities across business units and IS units" pp. 429			x	x	operational
(van der Zee and de Jong 1999)	alignment, integration	"Multilevel, integrated business and IT management are aimed at fully integrating the capabilities of IT with business strategies and management's expectations, and vice versa." pp. 137	x			x	cross-domain
(Saaksjarvi 2000)	alignment, integration	"a construct estimating the status of integration, for example, how well business and IT managers support and contribute to each others' strategies, and how well business and IT specialists support and contribute to each others' processes and information systems" pp. 3	x	x	x	x	cross-domain
(Tallon et al. 2000)	strategic alignment	"the alignment of IT with the business strategy" pp. 154	x	x			intellectual
(Sabherwal et al. 2001)	alignment	"alignment between business and information system (IS) strategies, and between business and IS structures" pp. 179	x	x	x	x	cross-domain
(Kearns and Lederer 2003)	strategic alignment	"the alignment of the IT plan with the business plan....and alignment of the business plan with the IT plan" pp. 6-7	x	x			intellectual
(Barua et al. 2004)	process alignment, system integration	"the degree of fit between business processes and underlying technology assets to facilitate online transactions and sharing of, and access to, strategic and tactical information." pp. 593			x	x	operational
(Lee et al. 2004)	alignment	"the link between IS planning and business planning" pp. 393	x	x			intellectual
(Porra et al. 2005)	alignment	"IT should align its strategy and structure with those of the firm" pp. 723	x	x	x	x	cross-domain
(Tan and Gallupe 2006)	alignment	"achieved when a high-quality set of interrelated business and IS plans exists" pp. 223	x	x			intellectual
(Thrasher et al. 2006)	strategic fit	"fit between organizational structure and IT resources" pp. 693			x	x	operational



Study	Term(s)	Definition	Domain				Dimension
			BusS	ITS	BusIP	ITIP	
(Wijnhoven et al. 2006)	alignment, integration	"the actual business goals - or in our context merger objectives - and nature of the organisational processes and infrastructure should feed the choices with regard to the IT strategy and the IT processes and infrastructure" pp. 7	x	x	x	x	cross-domain
(Cragg et al. 2007)	alignment	"fit between Business Infrastructure and IT Infrastructure" pp. 38			x	x	operational
(Huang and Hu 2007)	alignment	"active design, management, and execution of the IT functions in accordance with the company's goals and strategies" pp. 174	x			x	cross-domain
(Kang et al. 2008)	ERP alignment	"the alignment between organizational infrastructure and information system infrastructure" pp. 26			x	x	operational
(Lee et al. 2008)	technical alignment	"emphasizes the functional integration between business and IT domain" pp. 1170			x	x	operational
(Chen 2010)	alignment	"how much IT and business systems are in harmony with one another... the fit between business and IT strategies orientation" pp. 9	x	x			intellectual
(Heim and Peng 2010)	process integration intelligence	"extent to which information technology is adopted for tactical uses at the process level within manufacturing operations" pp. 147			x	x	operational

## Appendix B – Studies Included in the Review

Legend: I (Intellectual), O (Operational), C (Cross-Domain), S (Social)  
F (Financial Performance), P (Productivity), C (Customer Benefit), A (All 3 Grouped)  
E# = The study did not pass the numbered inclusion criteria.

Study (Source)	Alignment Term(s)	Alignment Dimension				Firm Performance Dimension				Sample Size or Exclusion Criteria
		I	O	C	S	F	P	C	A	
(Aerts et al. 2004)	alignment			X			X			E3
(Armstrong and Sambamurthy 1999)	assimilation			X		X				153
(Avison et al. 2004)	strategic alignment			X		X				E2
(Baets 1992)	strategic alignment	X								E3
(Baets 1996)	strategic alignment			X						E3
(Barua et al. 2004)	process alignment, system integration		X			X		X		1076

Study (Source)	Alignment Term(s)	Alignment Dimension				Firm Performance Dimension				Sample Size or Exclusion Criteria
		I	O	C	S	F	P	C	A	
(Bassellier and Benbasat 2004)	integration		X							E2
(Benbya and McKelvey 2006)	alignment			X			X			E3
(Bergeron et al. 2001)	fit	X		X		X				110
(Bergeron et al. 2004)	strategic alignment, fit, coalignment			X		X	X			E3
(Bergman et al. 2007)	power alignment, knowledge integration				X					E1
(Bharadwaj et al. 2007)	coordination; integration		X				X			169
(Boddy and Paton 2005)	alignment			X		X	X	X		E3
(Broadbent and Weill 1993)	strategy alignment	X								E3
(Broadbent et al. 1999b)	alignment			X		X				E3
(Brown and Magill 1994)	alignment, functional integration, strategic fit		X				X			E3
(Brown and Magill 1998)	alignment			X						E3
(Brown 1999)	alignment, coordination, collaboration		X				X			E3
(Burn 1993)	strategic alignment, integration, linkage			X						E3
(Burn 1996)	alignment, integration			X						E3
(Burn and Szeto 2000)	strategic alignment, integration, linkage			X		X	X	X		E3
(Byrd et al. 2006)	strategic alignment, coordination, integration	X				X				84
(Celuch et al. 2007)	strategic alignment		X			X		X		160
(Chan and Huff 1992)	strategic fit	X								E3
(Chan et al. 1997)	strategic alignment	X					X			E2
(Chan et al. 2006)	strategic alignment	X				X				226, 244
(Chan and Reich 2007)	alignment, fit, integration, bridge, harmony, fusion, congruence, covariation			X						E3
(Chang et al. 2008)	alignment, business-IT fit	X					X			E3
(Chen 2010)	alignment	X								22
(Chen et al. 2010a)	strategic alignment	X			X					E3
(Choe et al. 1998)	alignment of IS with business strategy	X								E3
(Choe 2003)	alignment of IS with business strategy	X				X				E3
(Chung et al. 2003)	strategic alignment, strategic IT-business alignment	X								191
(Cooper et al. 2000)	strategic alignment			X		X				E3

Study (Source)	Alignment Term(s)	Alignment Dimension				Firm Performance Dimension				Sample Size or Exclusion Criteria
		I	O	C	S	F	P	C	A	
(Corea 2006)	alignment		X							E3
(Cragg et al. 2002)	alignment	X				X		X		256
(Cragg et al. 2007)	alignment		X						X	66
(Croteau and Bergeron 2001)	strategic alignment	X								E3
(Croteau and Raymond 2004)	co-alignment	X				X				104
(Cumps et al. 2009)	alignment	X				X				E3
(Das et al. 1994)	integration; fit	X		X		X				E2
(De Haes and Van Grembergen 2008)	alignment		X							E3
(De Haes and Van Grembergen 2009)	alignment		X							E3
(Doherty et al. 1999)	strategic alignment	X				X	X			E3
(Dorociak 2007)	strategic alignment	X							X	3, 5, 7, 9, 17, 27
(Duncan 1995)	alignment	X				X				E3
(Feurer et al. 2000)	alignment; linkage			X						E3
(Fink and Neumann 2009)	strategic alignment	X				X				293
(Finlay and Forghani 1998)	alignment	X				X	X			E2
(Floyd and Wooldridge 1990)	alignment of information technology and business strategy	X				X				E3
(Fowler and Jeffs 1998)	alignment		X			X				E3
(Gerth and Rothman 2007)	alignment		X							E3
(Gottschalk and Solli-Saether 2001)	integration	X								41
(Grant 2003)	strategic alignment	X				X				E2
(Grover and Segars 2005)	alignment	X								E3
(Gupta et al. 1997)	alignment; integration			X						E3
(Hackathorn and Karimi 1988)	alignment	X								E3
(Heim and Peng 2010)	process integration intelligence		X			X	X	X		238
(Henderson and Sifonis 1988)	consistency, linking	X								E3
(Henderson and Venkatraman 1993; 1999)	strategic alignment = strategic fit + functional integration	X	X	X	X	X				E3
(Hong and Kim 2002)	organizational fit		X				X			34
(Hooper 2006)	alignment		X			X		X		175
(Hu and Huang 2006)	alignment				X	X	X	X		E1
(Huang and Hu 2007)	alignment			X		X	X	X		E3

Study (Source)	Alignment Term(s)	Alignment Dimension				Firm Performance Dimension				Sample Size or Exclusion Criteria
		I	O	C	S	F	P	C	A	
(Huang 2009)	alignment of IS with business strategy	X								209
(Hung et al. 2010)	strategic alignment		X	X		X	X	X		355
(Hussin et al. 2002)	alignment	X								E3
(Ives and Jarvenpaa 1991)	alignment, coordination, linkage	X				X				E3
(Jackson 1989)	alignment	X								E3
(Jarvenpaa and Ives 1993)	fit		X							E3
(Jenkin and Chan 2010)	strategic alignment	X					X			E2
(Johnson and Lederer 2005)	convergence				X	X				E1
(Johnson and Lederer 2010)	strategic alignment	X							X	E3
(Johnston and Carrico 1988)	integration	X				X				E3
(Johnston and Yetton 1996)	fit, integration strategy	X					X			E3
(Jordan and Tricker 1995)	alignment			X		X				E2
(Kanellis et al. 1999)	fit			X						E3
(Kang et al. 2008)	ERP alignment		X				X			116
(Kanooni 2009)	strategic information systems planning alignment; task coordination	X					X			126
(Karahanna and Watson 2006)	strategic alignment	X								E3
(Karimi and Konsynski 1991)	alignment, linkage			X		X				E3
(Karimi et al. 1996)	strategy-technology alignment	X				X				E3
(Karimi et al. 2000)	alignment, coordination	X			X		X			E3
(Kearns and Lederer 2000)	planning alignment	X				X				268
(Kearns and Lederer 2003)	strategic alignment	X				X				161
(Kearns and Lederer 2004)	planning alignment	X				X				161
(Kearns 2005)	alignment	X				X				E3
(Kearns and Sabherwal 2006)	strategic alignment	X				X	X			273
(Kearns 2006)	planning alignment	X				X				20, 141
(Kearns and Sabherwal 2007)	knowledge integration, alignment				X				X	E1
(Kempaiah 2008)	strategic alignment maturity	X				X				15
(Khadem 2007)	strategic alignment; strategic fit; strategic integration	X								321

Study (Source)	Alignment Term(s)	Alignment Dimension				Firm Performance Dimension				Sample Size or Exclusion Criteria
		I	O	C	S	F	P	C	A	
(Khaiata and Zualkernan 2009)	alignment			X						E3
(King 1978)	linking	X								E3
(King and Teo 1997)	integration	X								E3
(Kishore and McLean 2007)	organizational alignment; congruence, coherence, consistency, fit, harmony, match		X							E2
(Kunnathur and Shi 2001)	alignment	X				X		X		90
(Lacity and Hirschheim 1995)	alignment	X				X				E3
(Lai et al. 2009)	strategic alignment	X					X			166
(Lederer and Mendelow 1987)	integration	X								E3
(Lederer and Mendelow 1989)	coordination	X								E3
(Lederer and Salmela 1996)	alignment	X								E3
(Lee et al. 2004)	alignment	X					X			57
(Lee and Leifer 1992)	alignment, integration, linking		X				X			E3
(Lee et al. 2008)	technical alignment		X			X	X			12
(Levy et al. 2001)	alignment	X				X				E3
(Li et al. 2006a)	goal, objectives, planning process alignment	X					X	X		49
(Ling et al. 2009)	alignment, organizational alignment capability			X		X	X			72
(Luftman et al. 1993)	strategic alignment = strategic fit + functional integration			X		X				E3
(Luftman et al. 1999)	alignment	X				X				E3
(Luftman 2000)	strategic alignment maturity			X						E3
(Luftman 2003)	strategic alignment maturity			X						E3
(Luftman et al. 2008)	strategic alignment maturity			X		X				138
(Madapusi and D'Souza 2005)	alignment			X			X			E3
(Main and Short 1989)	alignment			X			X			E3
(Mehta and Hirschheim 2007)	strategic alignment	X				X	X			E3
(Miller 1993)	alignment		X				X			E2
(Mohdzain and Ward 2007)	strategic alignment	X				X				E3
(Moody 2003)	alignment		X							E3
(Morris 2006)	strategic integration	X								102
(Nash 2006)	strategic alignment maturity	X				X	X			9
(Newkirk et al. 2003)	alignment	X					X			E4
(Newkirk and Lederer 2006a)	alignment	X								161

Study (Source)	Alignment Term(s)	Alignment Dimension				Firm Performance Dimension				Sample Size or Exclusion Criteria
		I	O	C	S	F	P	C	A	
(Newkirk and Lederer 2006b)	alignment	X								161
(Newkirk et al. 2008)	alignment	X								161
(Oh and Pinsonneault 2007)	strategic alignment, fit	X				X				E3
(Palmer and Markus 2000)	strategic alignment	X				X	X			E3
(Peak and Guynes 2003)	alignment			X						E3
(Peak et al. 2005)	alignment			X		X	X			E2
(Peppard and Ward 2004)	alignment	X				X				E3
(Porra et al. 2005)	alignment			X			X			E3
(Powell 1992)	structural integration		X			X				113
(Premkumar and King 1992)	alignment, integration, fit between role of IS and IS planning				X	X				E1
(Preston et al. 2006)	shared understanding				X					E1
(Preston and Karahanna 2009)	strategic alignment	X								243
(Pyburn 1983)	linkage	X				X				E3
(Raghunathan 1992)	alignment, linkage	X								E3
(Ragu-Nathan et al. 2001)	alignment	X								E3
(Ravishankar et al. in press)	strategic alignment	X				X				E2
(Raymond et al. 1995)	alignment, congruence, match, fit		X			X	X			E3
(Raymond and Croteau 2006)	alignment			X		X				E3
(Raymond and Bergeron 2008)	strategic alignment			X		X	X	X		35, 21, 107, 51
(Reich and Benbasat 1996)	linkage				X					E1
(Reich and Benbasat 2000)	alignment (intellectual and social)				X					E1
(Rivard et al. 2006)	alignment, strategic fit, IT supports strategy, IT supports firm assets	X	X			X				96
(Robbins and Stylianou 1999)	integration		X			X	X			E3
(Roepke et al. 2000)	alignment			X			X			E3
(Saaksjarvi 2000)	integration, alignment			X						33, 91
(Sabherwal and Kirs 1994)	alignment	X					X			E3
(Sabherwal et al. 2001)	alignment			X			X			E3

Study (Source)	Alignment Term(s)	Alignment Dimension				Firm Performance Dimension				Sample Size or Exclusion Criteria
		I	O	C	S	F	P	C	A	
(Sabherwal and Chan 2001)	strategic alignment	X				X				62, 164, 226
(Sanchez Ortiz 2003)	alignment			X					X	1
(Schniederjans and Cao 2009)	alignment, fit	X							X	176
(Schwarz et al. 2010)	alignment	X					X			58
(Scott 2005)	alignment; linkage	X								E3
(Segars and Grover 1998)	alignment	X								253
(Smaczny 2001)	alignment; fusion			X						E3
(Smits et al. 1997)	alignment	X				X				E3
(Stoel 2006)	alignment	X				X	X			69
(Taipala 2008)	strategic alignment	X				X				71, 72, 73, 76, 77
(Tallon 2000)	strategic alignment			X		X	X	X		63
(Tallon et al. 2000)	strategic alignment	X				X	X	X		304
(Tallon and Kraemer 2006)	strategic alignment			X		X	X			E3
(Tallon 2007b)	alignment			X		X	X	X		241
(Tallon 2007a)	strategic alignment; fit	X				X	X			E3
(Tan 1995)	linkage, responsiveness	X								E3
(Tan and Gallupe 2006)	alignment	X								6
(Tarafdar and Gordon 2007)	linkage, alignment			X			X			E3
(Tarafdar and Qrunfleh 2009)	strategic alignment; tactical alignment			X						E3
(Tavakolian 1989)	linkage, fit, alignment			X						E3
(Teo and King 1996)	integration	X					X	X		157
(Teo and King 1997)	integration	X								157
(Teo and King 1999)	integration	X					X	X		157
(Teo and Ang 1999)	alignment	X								E3
(Thrasher et al. 2006)	strategic fit		X				X			E3
(Tiwana and Konsynski 2010)	alignment	X								90
(van der Zee and de Jong 1999)	alignment; integration			X			X			E3
(Wang and Tai 2003)	integration	X					X			156
(Weiss et al. 2006)	alignment			X			X			E3
(Wijnhoven et al. 2006)	alignment, integration			X			X			E3
(Willcoxson and Chatham 2004)	alignment	X								E3
(Yayla 2008)	alignment	X								33, 169
(Zhu et al. 2009)	fit		X				X			65
(Zviran 1990)	linkage; alignment	X				X	X			E3

## Appendix C – Alignment Models Based on the Contingency Perspective

Study	Correlates			Theoretical Support
	Environ. Turb.	Strategy	Governance Structure	
(Bergeron et al. 2001)	x	x	x	the environment, strategy, and structure impacts the firm's ability to align
(Bergeron et al. 2004)	x	x	x	the strategic, structural, and environmental dynamics specific to organizations influence alignment
(Brown and Magill 1994)			x	from prior contingency research, governance structures were selected and confirmed as antecedents to alignment
(Brown and Magill 1998)		x	x	strategy and governance structure are typical contextual factors that explain alignment
(Chan and Huff 1992)	x		x	company (i.e. structural) and environmental contingency factors should be considered when studying alignment
(Chan et al. 2006)	x	x		alignment should vary based on environmental uncertainty and the firm's strategic orientation
(Chang et al. 2008)	x		x	environmental and structural factors are important components impacting alignment
(Chen et al. 2010a)	x			alignment is contingent on the external environment (i.e. how the firm manages the environment)
(Choe 2003)	x			environmental uncertainty effects IS strategic applications through the facilitators of alignment
(Croteau and Raymond 2004)		x		strategy is one possible contingent variable that is an impetus for change (i.e. alignment)
(Huang 2009)	x			the level of alignment depends on the environment and the firm's response to it
(Johnson et al. 1996)			x	strategic choices and alignment are dependent upon structural compatibility
(Jordan and Tricker 1995)	x			environment is a critical contingency factor for IT strategy, organizational structure, and the alignment of the two
(Kang et al. 2008)			x	effective alignment depends on the structure of activities and authority in the organization
(Kearns and Lederer 2004)	x			environmental turbulence should influence a firm's dependency on IT, hence increasing the firm's need to align IT with the business
(Lee and Leifer 1992)	x			the environment is a contextual factor that impacts a firm's alignment capabilities
(Lee et al. 2008)	x	x	x	alignment is part of the strategy formation process, involving the interaction of strategic arrangements, organizational structures, and the business environment
(Levy et al. 2001)	x	x		the success of strategic alignment is dependent upon the firm's strategy and the firm's position in the environment



Study	Correlates			Theoretical Support
	Environ. Turb.	Strategy	Governance Structure	
(Oh and Pinsonneault 2007)	x	x	x	environmental, structural, and strategic factors influence alignment
(Palmer and Markus 2000)		x		strategic alignment success is dependent upon the firm's IT and business strategies
(Pyburn 1983)	x		x	the complexity and volatility of the environment and structural organization of the firm are important factors influencing successful alignment
(Raymond et al. 1995)	x			environmental uncertainty is a contingency variable that plays an important role in the alignment relationship
(Raymond and Croteau 2006)		x		alignment success depends on the business strategy
(Sabherwal and Chan 2001)		x		alignment success depends on the business strategy
(Tan 1995)		x		alignment differs based on the strategy
(Teo and King 1997)	x			environmental turbulence is a commonly studied contingent variable that is expected to influence alignment
(Wang and Tai 2003)	x		x	the structure of the organization and assessment of the environment influence alignment
(Yayla 2008)	x	x	x	effective alignment is influenced by the environment and the firm's strategy and structure

### Appendix D – Alignment Antecedents/Correlates Supported by RBV

Study	Antecedents/Correlates			Theoretical Support
	Social Align.	IT Invest.	Infra-Structure	
(Armstrong and Sambamurthy 1999)	x		x	<ul style="list-style-type: none"> <li>ability to blend knowledge (social alignment) leads to the superior ability to strategically align</li> <li>governance structure is a strategic option, where options are resources for exploiting opportunities, aligning the business and IT, and gaining competitive advantage</li> </ul>
(Bassellier and Benbasat 2004)	x			developing and sharing knowledge in order to integrate the business and IT is a strategically significant resource
(Broadbent et al. 1999b)	x			managerial skills and knowledge are important for establishing alignment and achieving a sustainable competitive advantage
(Celuch et al. 2007)	x	x		<ul style="list-style-type: none"> <li>managerial skills and knowledge are critical for establishing alignment between the business and IT</li> <li>IT investments are used to build valuable, rare, costly, and inimitable alignment capabilities</li> </ul>

Study	Antecedents/Correlates			Theoretical Support
	Social Align.	IT Invest.	Infra-Structure	
(Chen et al. 2010a)		x		IT investments should be used to facilitate the development of IS capabilities, alignment, and competitive advantage
(Kearns and Lederer 2003)	x			knowledge sharing uncovers IT-based opportunities and produces superior strategies for alignment purposes
(Lee et al. 2008)		x		IT is a strategic resource that can be used to build alignment and create sustainable competitive advantage
(Oh and Pinsonneault 2007)		x		the same IT investments are available to all firms, so the IT investment itself does not provide a competitive advantage without aligning with other firm competencies
(Peppard and Ward 2004)		x		IT investments should be used to develop organizational competencies such that alignment is established and, consequently, business advantages are enabled and flexibility to environmental change is possible
(Roepke et al. 2000)	x			establishing social complexities such as shared understanding and cooperation among the business and IT managers (social alignment) is an imperfectly mobile resource that can be used for achieving strategic alignment and sustainable competitive advantage
(Stoel 2006)	x			the ability to develop a shared understanding between the business and IT departments is valuable, rare, and firm specific; hence, it is a potential source of competitive advantage and can mediate the impact of alignment, another firm resource, on firm performance as well
(Taipala 2008)	x			the shared knowledge among the people is one of the most valuable assets of an organization such that a firm can establish competitive advantage/strategic alignment (where strategic alignment is measured as a surrogate of competitive advantage)
(Tallon 2000)		x		"strategic alignment will follow if IT investments are used in creating, maintaining and improving the capabilities that underlie the business strategy" pp. 34

## Appendix E – Social Alignment as an Antecedent in the Extant Alignment Literature

Reference	Term(s) Used	Statement of Findings	Relationship Direction		
			positive	negative	insig.
(Armstrong and Sambamurthy 1999)	IT knowledge of senior business executives	social alignment did not have a significant influence on strategic alignment			x

Reference	Term(s) Used	Statement of Findings	Relationship Direction		
			positive	negative	insig.
(Chan et al. 2006)	shared knowledge	social alignment is positively related to strategic alignment	x		
(Chen 2010)	communications maturity, partnership maturity	social alignment is positively related to strategic alignment	x		
(Fink and Neumann 2009)	shared knowledge	social alignment positively influences strategic alignment	x		
(Gottschalk and Solli-Saether 2001)	shared participation	social alignment does not always positively correlate with strategic alignment	2/3 of the variables		1/3 of the variables
(Heim and Peng 2010)	cooperation	social alignment is positively associated with strategic alignment	x		
(Huang 2009)	relationships, coordination	social alignment is positively related to strategic alignment	x		
(Hung et al. 2010)	learning together	social alignment positively influences strategic alignment	x		
(Kearns and Lederer 2003)	shared participation	social alignment is positively associated with strategic alignment	x		
(Kearns and Lederer 2004)	shared participation	the relationship was not directly addressed, but the correlation table reveals correlations between social and strategic alignment as small as 0.09	x		potentially
(Kearns and Sabherwal 2006)	shared participation, shared knowledge	social alignment is positively related to strategic alignment	x		
(Kearns 2006)	shared participation	social alignment positively influences strategic alignment	x		
(Kunnathur and Shi 2001)	cooperation	social alignment is positively associated with strategic alignment	x		
(Lai et al. 2009)	trust, commitment	social alignment is positively related to strategic alignment	x		

Reference	Term(s) Used	Statement of Findings	Relationship Direction		
			positive	negative	insig.
(Lee et al. 2008)	social alignment	social alignment positively influences strategic alignment	x		
(Li et al. 2006a)	collaboration, shared understanding	social alignment does not always positively correlate with strategic alignment	3/4 of the variables		1/4 of the variables
(Luftman et al. 2008)	communication, partnership	social alignment is positively related to strategic alignment	x		
(Newkirk and Lederer 2006a)	cooperation	social alignment positively influences strategic alignment	x		
(Newkirk and Lederer 2006b)	cooperation	social alignment is positively associated with strategic alignment	x		
(Preston and Karahanna 2009)	shared understanding	social alignment positively influences strategic alignment	x		
(Sabherwal and Kirs 1994)	shared awareness, shared knowledge, participation	social alignment is positively associated with strategic alignment	x		
(Segars and Grover 1998)	cooperation	social alignment is positively related to strategic alignment	x		
(Stoel 2006)	shared knowledge, shared understanding	social alignment positively influences strategic alignment	x		
(Teo and King 1997)	shared competence	social alignment is positively associated with strategic alignment	x		
(Tiwana and Konsynski 2010)	shared knowledge	social alignment did not have a significant association with strategic alignment			x
(Yayla 2008)	communication, shared knowledge	social alignment is positively related to strategic alignment	x		

## Appendix F – Example E-mail to Authors for Unpublished Correlation Tables

My name is Jennifer Gerow. I am a PhD Candidate at Clemson University in Clemson, South Carolina doing some research on IT-business strategic alignment for my dissertation. I am currently reviewing all the literature, and my records indicate you have published at least one paper on alignment. In light of this, I realize it is a possibility some of your research might not yet be published.

To be completely thorough in my search, would you be willing to send me any unpublished papers you currently have in your queue? Specifically, I am looking for empirical papers that report variables that are correlated with strategic alignment. Please be assured this data will only be used as input for a large meta-analysis project. It will not be distributed or shared.

## Appendix G – Example E-mail to Authors for Correlation Tables in Published Papers

Hello. My name is Jennifer Gerow. I am a PhD Candidate at Clemson University in Clemson, South Carolina doing some research on IT-business alignment for my dissertation. Your JOURNAL YEAR paper (PAPER NAME) is a good candidate for my research. In order to use the paper, I need the inter-construct correlation table that accompanies your model. Would you be willing to send this information to me? Please be assured this data will only be used as input for a large meta-analysis project. It will not be distributed or shared.

## Appendix H – Meta-Analysis Results for Alignment as a Single Dimension/Higher Order Construct

Analysis	$\hat{\rho}$	k	N	Var.	80% CRI		PVA
					10% CV	90% CV	
Firm Performance	0.5301 <sup>51</sup>	57	8082	0	0.5301	0.5301	100%
Financial Perf.	0.4032	36	6355	0.0579	0.0952	0.7112	19%
Productivity	0.5208	23	3116	0.0734	0.1740	0.8675	25%
Customer Benefit	0.4906	11	3007	0.0228	0.2975	0.6837	36%
Social Alignment	0.6487	32	4383	0.0512	0.3591	0.9383	20%
Environmental Turbulence	0.3461	13	1609	0.0339	0.1105	0.5817	47%
IT investment	0.2673	5	876	0.0392	0.0139	0.5208	22%
Firm Size	0.1021	8	1254	0.1041	-0.3108	0.5150	15%
Strategy	0.5425	9	1413	0.0829	0.1740	0.9111	7%
Governance Structure	0.6132	16	1734	0	0.6132	0.6132	100%

$\hat{\rho}$  = corrected population correlation estimate (i.e. the corrected correlation estimate for all firms); k = number of studies; N = number of observations; Var. = variance of true score correlations; CRI = credibility interval; PVA = percent of variance in observed correlations attributable to all artifacts; gray, highlighted cells = the range of population correlation estimates includes zero

## APPENDIX I: Alignment Definitions

**Table II: Various Intellectual Alignment Definitions**

Definition	Reference*
link "the organization's 'strategy set' to an MIS 'strategy set'" p27	(King 1978)
"the relationship between the overall organization's missions, objectives, and strategies, and those for MIS" p3	(Pyburn 1983)
"link between IS planning and strategic business planning" p188	(Henderson and Sifonis 1988)
"linkage of the IS strategy with business strategy" p205	(Baets 1992)

<sup>51</sup> This is the corrected population correlation estimate for the relationship between alignment and firm performance both as one dimension.

<b>Table I1: Various Intellectual Alignment Definitions</b>	
<b>Definition</b>	<b>Reference*</b>
"align the IT strategy with organizational strategy" p304	(Sabherwal and Kirs 1994)
"the alignment between business unit strategic orientation and IS strategic orientation" p132	(Chan et al. 1997)
"the alignment of IT with the business strategy" p154	(Tallon et al. 2000)
"the alignment of the IT plan with the business plan....and alignment of the business plan with the IT plan" p6-7	(Kearns and Lederer 2003)
"the link between IS planning and business planning" p393	(Lee et al. 2004)
"the degree to which the mission, objectives, and plans contained in the business strategy are shared and supported by the IS strategy" p27	(Chan et al. 2006)
"achieved when a high-quality set of interrelated business and IS plans exists" p223	(Tan and Gallupe 2006)
"how much IT and business systems are in harmony with one another...the fit between business and IT strategies orientation" p9	(Chen 2010)
<b>*Definitions are sorted by year (earliest to latest)</b>	

<b>Table I2: Various Operational Alignment Definitions</b>	
<b>Definition</b>	<b>Reference*</b>
"alignment between IS structures and emerging management structures based upon the linking concept of information sharing" p28	(Lee and Leifer 1992)
"the link between organizational infrastructure and processes and I/S infrastructure and processes" p476	(Henderson and Venkatraman 1993; 1999)
"coordinating activities across business units and IS units" p429	(Brown 1999)
"the degree of fit between business processes and underlying technology assets to facilitate online transactions and sharing of, and access to, strategic and tactical information." p593	(Barua et al. 2004)
"fit between organizational structure and IT resources" p693	(Thrasher et al. 2006)
"fit between Business Infrastructure and IT Infrastructure" p38	(Cragg et al. 2007)
"the alignment between organizational infrastructure and information system infrastructure" p26	(Kang et al. 2008)
"emphasizes the functional integration between business and IT domain" p1170	(Lee et al. 2008)
"extent to which information technology is adopted for tactical uses at the process level within manufacturing operations" p147	(Heim and Peng 2010)
<b>*Definitions are sorted by year (earliest to latest)</b>	

<b>Table I3: Various Cross-Domain Alignment Definitions</b>	
<b>Definition</b>	<b>Reference*</b>
"alignment of the firm's key business strategies and the IT infrastructure and work processes, the latter including: the company's IT architecture, the underlying work production processes for managing and adapting the IT infrastructure, and the IT human resource skill base" p471	(Main and Short 1989)
"the firm's strategy and its information-processing requirements must be in alignment with the firm's organizational structure and information-processing capabilities" p10	(Karimi and Konsynski 1991)
"reflects the view that business success depends on the harmony of business strategy, information technology strategy, organizational infrastructure and processes, and I/T infrastructure and processes" p206	(Luftman et al. 1993)
"aligning the information strategy with the organizational structure" p377	(Jordan and Tricker 1995)
"collaborative process between the business strategy, the business organization, the IS infrastructure, and the IT strategy" p156	(Baets 1996)
"alignment of IT infrastructure with business strategy" p163	(Broadbent et al. 1999b)
"Multilevel, integrated business and IT management are aimed at fully integrating the capabilities of IT with business strategies and management's expectations, and vice versa." p137	(van der Zee and de Jong 1999)
"a construct estimating the status of integration, for example, how well business and IT managers support and contribute to each others' strategies, and how well business and IT specialists support and contribute to each others' processes and information systems" p3	(Saaksjarvi 2000)
"alignment between business and information system (IS) strategies, and between business and IS structures" p179	(Sabherwal et al. 2001)
"IT should align its strategy and structure with those of the firm" p723	(Porra et al. 2005)
"the actual business goals - or in our context merger objectives - and nature of the organisational processes and infrastructure should feed the choices with regard to the IT strategy and the IT processes and infrastructure" p7	(Wijnhoven et al. 2006)
"active design, management, and execution of the IT functions in accordance with the company's goals and strategies" p174	(Huang and Hu 2007)
"the degree of fit and integration among business strategy, IT strategy, business infrastructure, and IT infrastructure"	(Chan and Reich 2007 p300; Henderson and Venkatraman 1993; 1999)
<b>*Definitions are sorted by year (earliest to latest)</b>	

## APPENDIX J: Existing Alignment Items

Survey Item	Adaptation Status	Reference
<i>Adapting technology to strategic change.</i>	adapted	(Segars and Grover 1998)
<i>Adapting the goals/objectives of IS to changing goals/objectives of the organization.</i>		
<i>Aligning IS strategies with the strategic plan of the organization.</i>		
<i>Assessing the strategic importance of emerging technologies.</i>		
<i>Identifying IT-related opportunities to support the strategic direction of the firm.</i>		
<i>Educating top management on the importance of IT.</i>		
<i>Maintaining a mutual understanding with top management on the role of IS in supporting strategy.</i>	can't use because measuring social alignment	
<i>Understanding the strategic priorities of top management.</i>		
<b>The processes built in ERP accommodate the change required from organizational processes.</b>	fits the domain, so tried to adapt	
<b>The processes built in ERP correspond to the business practices of our company.</b>		
<b>The processes built in ERP meet all needs required from organizational processes.</b>		
<b>The processes flow built in ERP correspond to flow of organizational processes.</b>		
<b>The form and format data items of the ERP correspond to those of the documents used in our company.</b>	too specific to ERP	(Hong and Kim 2002)
<b>The input data items of the ERP correspond to those of the documents used in our company.</b>		
<b>The name and meaning of the ERP data items correspond to those of the documents used in our company (i.e. an sales order sheet, sales report).</b>		
<b>The output data items of the ERP correspond to those of the documents used in our company.</b>		
<b>User interface of the ERP is well designed to the business needs of our company.</b>		
<b>User interface of the ERP is well designed to the user capabilities of our company.</b>		
<b>User interface structures of the ERP is well designed to the work structure required for conducting business in our company.</b>		



<b>Survey Item</b>	<b>Adaptation Status</b>	<b>Reference</b>
<b>Cross-functional teams have more authority in making day-to-day decisions than departmental managers.</b>	doesn't fully capture the alignment of infrastructure/ processes between the business and IT	(Hung et al. 2010)
<b>Customer satisfied with response time.</b>		
<b>Frequent use of process teams</b>		
<b>High barriers between departments (R)</b>		
<b>IT important to improvement of business processes.</b>		
<b>Managerial tasks to front-line staff delegated.</b>		
<b>State-of-the-art technology.</b>		
<b>Technology enabled business processes to perform well.</b>		
<b>Well integrated IT systems across functional units.</b>	fits the domain, so tried to adapt	(Lee et al. 2008)
<b>Business process (work flow and process) and IT process (IS development process, data center operation, etc) correspond to each other.</b>		
<b>Organizational structure and IT architecture (application, database, hardware, etc) correspond to each other.</b>		
<b>There is a good fit between IT architecture and IT plan.</b>		
<b>There is a good fit between IT governance (IT management design) and organizational structure.</b>	doesn't fully capture the alignment of infrastructure/ processes between the business and IT	(Powell 1992)
<b>A person or department devoted exclusively to coordinating the efforts of different departments.</b>		
<b>Permanent planning or decision-making committees, consisting of managers from different departments in the firm (such as marketing, production, and finance).</b>		
<b>Regular meetings of key managers from different departments to discuss major policy decisions.</b>		
<b>Temporary teams or task forces consisting of managers from different departments for collaboration on a specific project.</b>	doesn't fully capture the alignment of infrastructure/ processes between the business and IT	(Zhu et al. 2009)
<b>Appropriate business process reengineering was conducted.</b>		
<b>Users were systematically trained and educated about ERP.</b>		

Survey Item	Adaptation Status	Reference
In my firm top management perceives the future exploitation of IT is of strategic importance.	doesn't capture the infrastructure/ process piece of cross-domain alignment	(Gupta et al. 1997)
Some IT development resource is positioned within the business unit.	doesn't capture the strategy piece of cross-domain alignment	
The introduction of, or experimentation with, new technologies takes place at the business unit level under business unit control.		
There is a top-down planning process for linking information systems strategy to business needs.	fits the domain, so tried to adapt	(Hung et al. 2010)
Sufficient measures permit clear tracking of performance.	doesn't capture the alignment of strategies and infrastructure/ processes	
Current strategic plan identified actually undertaken.	doesn't capture the infrastructure/ process piece of cross-domain alignment	
Developed strategies based on customer needs.		
Core processes important input into strategic plan.	fits the domain, so tried to adapt	
Operational improvements had direct impact on ability to compete.		
Strategic planning process actually encourages information sharing and cross-functional cooperation.		
The CoD (City of Denton) uses IT to achieve high quality performance that applies consistently throughout all facets of the organization.	doesn't capture the alignment of strategies and infrastructure/ processes	(Sanchez Ortiz 2003)
The CoD uses IT for performance review and feedback for improvement and innovation opportunities.		
The CoD uses IT to communicate values and expectations consideration.		
The CoD uses IT to identify customer/citizen groups and market segments.		
The CoD uses IT to make regular comparisons of its performance to similar world-class organizations to support its overall performance, evaluation, and improvement efforts.		

Survey Item	Adaptation Status	Reference
The CoD uses IT to promote cooperation, individual initiatives, innovation, and flexibility.		
The CoD uses IT to reinforce an environment for empowerment and innovation.		
The CoD uses IT in order to make necessary improvements to its processes.	doesn't capture the strategy piece of cross-domain alignment	
The CoD uses IT to evaluate the performance and capabilities of all function of the organization.		
The CoD uses IT to support organizational and employee learning.		
The CoD uses IT to gather external data and information to help support overall plans, strategies, goals and objectives.	fits the domain, so tried to adapt	
The CoD uses IT to gather internal performance data and information to help support overall plans, strategies, goals, and objectives.		
The CoD uses IT to set goals and objectives.		
The CoD uses IT to set plans and strategies to achieve goals and objectives.		
<i>Italicized items = Intellectual Alignment</i> <b>Bolded items = Operational Alignment</b> "Plain" items = Cross-Domain Alignment		

## APPENDIX K: Q-sort Judges' Panel Backgrounds and Qualifications

### Round 1 Participants:

- Management Information Systems (MIS) PhD with extensive alignment research background and at least one article published on IT-Business Strategic Alignment
- MIS PhD with at least one article published on IT-Business Strategic Alignment
- Operations Management (OM) PhD Candidate with over 9 years industry experience
- OM PhD Candidate with over 5 years industry experience
- OM PhD Candidate with 3 years industry experience
- OM PhD Student with no industry or IT experience
- MIS PhD Candidate with fairly extensive research on IT-Business Strategic Alignment
- Practitioner with over 20 years IT experience including 8 years experience working closely with business partners at a company with over \$2 billion in revenues
- Practitioner with over 20 years IT experience including 2 years in business intelligence in a company with \$51-100 million in revenues; well-versed in alignment issues
- Practitioner with over 30 years business experience including over 10 years experience in mid- to upper-level management working with IT; aware of alignment issues from the business perspective

### Round 2 Participants:

- MIS PhD Student with 4 years IT experience (programmer/developer) and a little exposure to the alignment literature
- MIS PhD Student with no industry experience and a little exposure to the alignment literature
- MIS PhD Student with no industry experience and a little exposure to the alignment literature
- MIS PhD Candidate with over 15 years IT experience with at least one article published on CIO-level issues

Round 3 Participants:

- 29 undergraduate business students taking Introduction to Management Information Systems with brief introduction to IT-Business Strategic Alignment, some working experience for a few participants

Round 4 Participants:

- MIS PhD Student with 7 years industry experience including 3 years of IT administration experience
- MIS PhD Student with no industry experience and a little exposure to the alignment literature
- MIS PhD Student with no industry experience and a little exposure to the alignment literature
- MIS PhD Student with 3 years industry experience and a little exposure to the alignment literature
- OM PhD Candidate with no industry experience
- OB-HR PhD with no industry experience and no exposure to the alignment literature
- Management PhD with no industry experience and no exposure to the alignment literature
- Management PhD with no industry experience and no exposure to the alignment literature

## APPENDIX L: Complete Instrument

### Information Concerning Participation in a Research Study: Clemson University

[Exit this survey](#)



#### **IT-Business Strategic Alignment: Essays Examining Dimensions of Alignment, Their Relationship with Firm Performance, and Executive Team Behaviors**

##### **Description of the Research and Your Participation**

You are invited to participate in a research study conducted by Jennifer Gerow, Varun Grover, and Jason Thatcher. The purpose of this research is to determine what factors influence the CIO's impact on the strategic and technical decisions of the firm. Your participation will involve the evaluation of your behavior and the behavior of the executive team members in your firm. The amount of time required for your participation will be 10-15 minutes answering questions on a web survey. This research is anonymous and no answer will be tied to you or your firm; additionally, there are no known risks associated with this research.

##### **Benefits to the Participating Individual**

The goal of this research is to empower CIOs like you to more positively influence your firms' top-level decision-makers. The research team will be happy to provide the results to any interested individual. The comprehensive report will provide an interpretation of data collected, visual presentation, and recommendations. This report will include an analysis of CIO perceptions of executive team behaviors. All monetary benefits will be provided by the company in charge of the panel.

**Confidentiality**

All data will be collected and maintained under strict standards to ensure the confidentiality of individual identities. No individual can be linked to his/her responses by anyone on the research team at any time.

**Voluntary Participation**

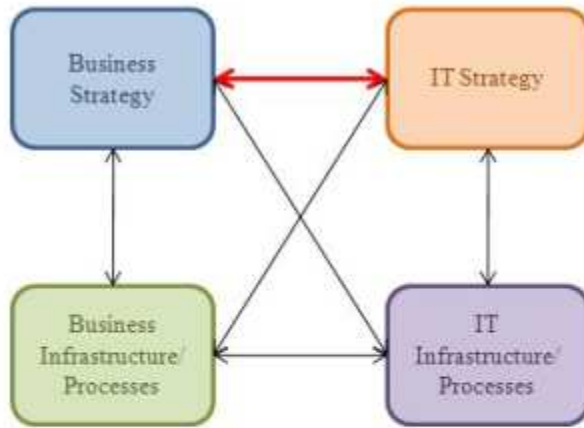
Your participation in this research study is voluntary. You may choose not to participate and you may withdraw your consent to participate at any time. You will not be penalized in any way should you decide not to participate or to withdraw from this study.

**Contact Information**

If you have any questions or concerns about this study or if any problems arise, please contact Jennifer Gerow (jgerow@clemson.edu, PhD Candidate), Varun Grover (vgrover@clemson.edu, William S. Lee Distinguished Professor of Information Systems), or Jason Thatcher (jthatch@clemson.edu, Associate Professor). If you have any questions or concerns about your rights as a research participant, please contact the Clemson University Office of Research Compliance (ORC) at 864-656-6460 or irb@clemson.edu. If you are outside of the Upstate South Carolina area, please use the ORC's toll-free number, 866-297-3071.

**Are you currently the head of your IT department (in other words, a CIO, VP of IT, or Director of IT)?**

- Yes
- No

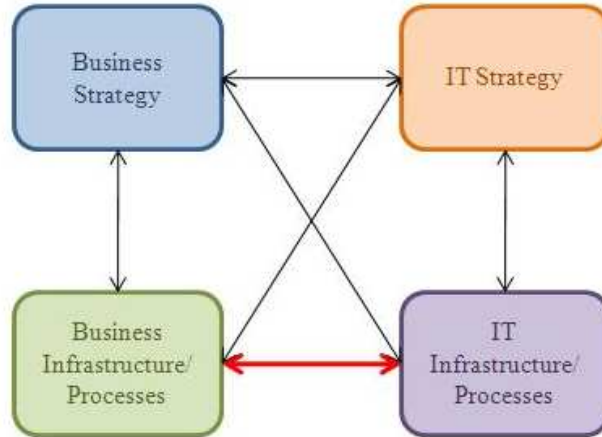


Thinking about the alignment between your higher-level, externally focused business strategies and IT strategies (see red arrow in above figure), to what extent are the following functions fulfilled in your firm? We are trying to get a sense of whether your IT strategy supports how your business competes in the market. For example, if your IT mission and goals are tightly integrated with your business mission and goals, you would select "Entirely Fulfilled". In my firm...

	Entirely Unfulfilled	Unfulfilled	Neither Fulfilled nor Unfulfilled	Fulfilled	Entirely Fulfilled
our <u>IT strategies</u> support our <u>business strategies</u> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <u>IT strategy</u> and <u>business strategy</u> match each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
we adapt our <u>IT strategy</u> to <u>business strategic change</u> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <u>IT strategies</u> align with our <u>business's strategic plan</u> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
we assess the <u>strategic importance</u> of emerging technologies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
we adapt our <u>IT goals and objectives</u> to our <u>business goals and objectives</u> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
we identify the fit between our <u>IT-related strategic opportunities</u> and our <u>business's strategic direction</u> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <u>IT strategies</u> and <u>business strategies</u> correspond to each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Business Infrastructure/Processes and IT Infrastructure/Processes

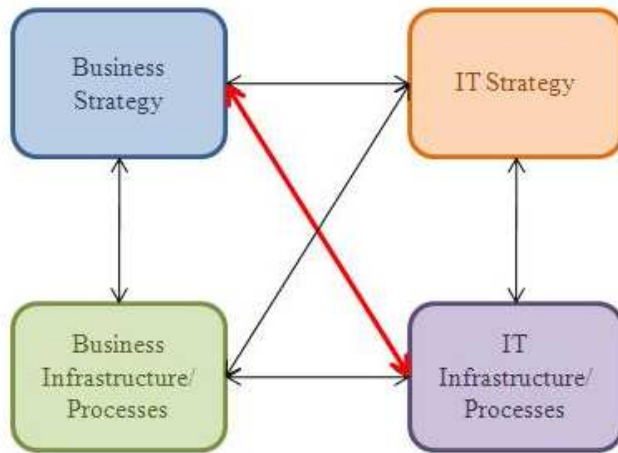
Exit this survey



Thinking about the alignment between your lower-level, internally focused *business infrastructure and processes* and *IT infrastructure and processes* (see red arrow in above figure), to what extent are the following functions fulfilled in your firm? We are trying to get a sense of whether you have *technical capabilities* in place to support your *business processes*. For example, if your *IT policies, procedures, personnel, and systems* strongly support your *internal business policies, procedures, personnel, and structure*, you would select "Entirely Fulfilled". In my firm...

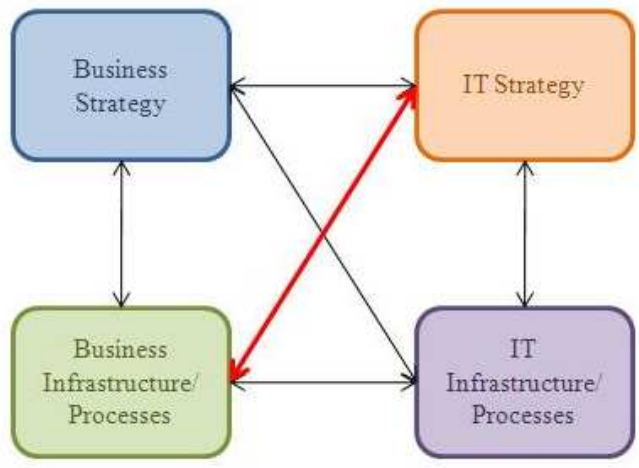
	Entirely Unfulfilled	Unfulfilled	Neither Fulfilled nor Unfulfilled	Fulfilled	Entirely Fulfilled
our <i>IT processes</i> support our <i>business processes</i> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
we adapt our <i>IT processes</i> to our <i>business processes</i> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <i>IT processes</i> and <i>business processes</i> match each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
we identify the fit between our <i>IT infrastructure</i> and our <i>business infrastructure</i> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <i>IT infrastructure</i> and <i>business infrastructure</i> correspond to each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <i>IT infrastructure</i> aligns with our <i>business infrastructure</i> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





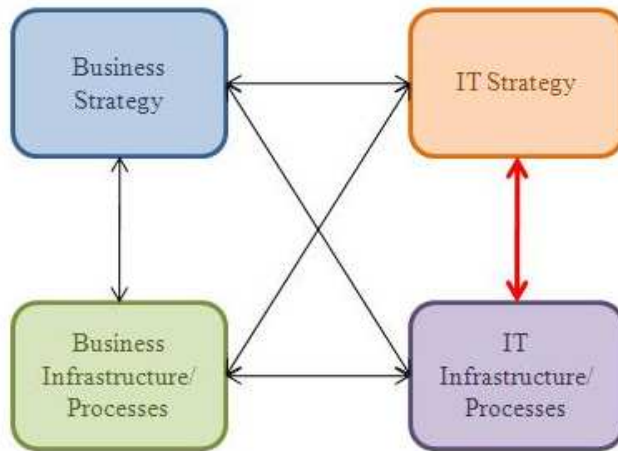
Thinking about the bridge between your higher-level, externally-focused business strategies and your lower-level, internally-focused *IT infrastructure and processes* (see red arrow in above figure), to what extent are the following functions fulfilled in your firm? We are trying to get a sense of whether your *technical capabilities* help you execute and develop your strategy for competing in the market. For example, if your *IT policies, procedures, personnel, and systems* strongly support your business mission and goals, you would select "Entirely Fulfilled". In my firm...

	Entirely Unfulfilled	Unfulfilled	Neither Fulfilled nor Unfulfilled	Fulfilled	Entirely Fulfilled
our <i>IT processes</i> support our <u>business strategies</u> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
we adapt our <i>internal IT processes</i> to our <u>business strategies</u> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <u>business strategies</u> and <i>internal IT processes</i> match each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
we identify the fit between our <u>business-related strategic opportunities</u> and our <i>IT infrastructure</i> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <i>IT infrastructure</i> and <u>business strategies</u> correspond to each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <i>IT infrastructure</i> aligns with our <u>business strategies</u> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



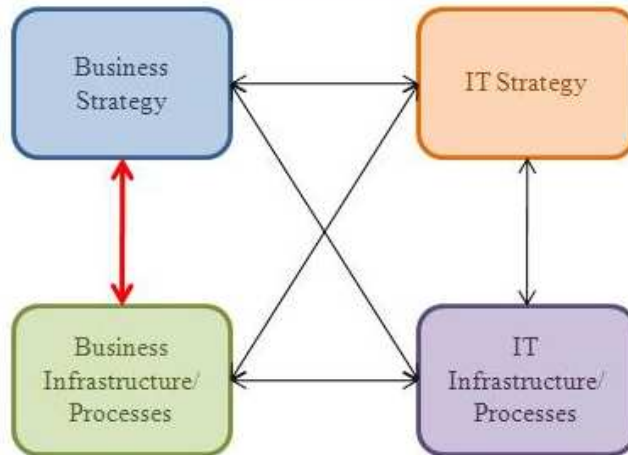
Thinking about the bridge between your higher-level, externally-focused IT strategies and your lower-level, internally-focused *business infrastructure and processes* (see red arrow in above figure), to what extent are the following functions fulfilled in your firm? We are trying to get a sense of whether your *business processes* help you execute and develop your IT strategy. For example, if your *internal business policies, procedures, personnel, and structure* strongly support your IT mission and goals, you would select "Entirely Fulfilled". In my firm...

	Entirely Unfulfilled	Unfulfilled	Neither Fulfilled nor Unfulfilled	Fulfilled	Entirely Fulfilled
our <u>IT strategies</u> support our <i>business processes</i> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
we adapt our <u>IT strategies</u> to our <i>internal business processes</i> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <u>externally-focused IT strategies</u> and <i>internal business processes</i> match each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
we identify the fit between our <u>IT-related strategic opportunities</u> and our <i>business infrastructure</i> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <i>business infrastructure</i> and <u>IT strategies</u> correspond to each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <i>business infrastructure</i> aligns with our <u>externally-focused IT strategies</u> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Thinking about the alignment between your higher-level, externally-focused IT strategies and your lower-level, internally-focused IT infrastructure and processes (see red arrow in above figure), to what extent are the following functions fulfilled in your firm? We are trying to get a sense of whether your *technical capabilities* help you execute and develop your IT strategy. For example, if your *IT policies, procedures, personnel, and systems* strongly support your IT mission and goals, you would select "Entirely Fulfilled". In my firm...

	Entirely Unfulfilled	Unfulfilled	Neither Fulfilled nor Unfulfilled	Fulfilled	Entirely Fulfilled
our <u>IT processes</u> support our <u>IT strategies</u> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
we adapt our <u>IT strategies</u> to our <i>internal IT processes</i> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <u>IT strategies</u> and <i>internal IT processes</i> match each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
we identify the fit between our <u>IT-related strategic opportunities</u> and our <i>IT infrastructure</i> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <i>IT infrastructure</i> and <u>IT strategies</u> correspond to each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <i>IT infrastructure</i> aligns with our <u>IT strategies</u> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Thinking about the alignment between your higher-level, externally-focused business strategies and your lower-level, internally-focused business infrastructure and processes (see red arrow in above figure), to what extent are the following functions fulfilled in your firm? We are trying to get a sense of whether your business processes help you execute and develop your strategy for competing in the market. For example, if your internal business policies, procedures, personnel, and structure strongly support your business mission and goals, you would select "Entirely Fulfilled". In my firm...

	Entirely Unfulfilled	Unfulfilled	Neither Fulfilled nor Unfulfilled	Fulfilled	Entirely Fulfilled	Don't Know
our <u>business processes</u> support our <u>business strategies</u> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
we adapt our <u>business strategies</u> to our <u>internal business processes</u> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <u>business strategies</u> and <u>internal business processes</u> match each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
we identify the fit between our <u>business-related strategic opportunities</u> and our <u>business infrastructure</u> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <u>business infrastructure</u> and <u>business strategies</u> correspond to each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
our <u>business infrastructure</u> aligns with our <u>business strategies</u> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Alignment

[Exit this survey](#)

Please indicate the extent to which you agree or disagree with each statement.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Business should always adjust to IT.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Firms should seek to align business and IT.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IT should always adjust to business.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alignment is good.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Firm Performance

[Exit this survey](#)

For each of the statements below, how has your firm performed relative to your competition during the last 5 years:

	Very Low	Low	Neither High nor Low	High	Very High	Don't Know
Our executive team's satisfaction with return on sales is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our executive team's satisfaction with the sales growth rate is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our executive team's satisfaction with the return on corporate investment is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The return on corporate investment position relative to our principal competitors is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The market share gains relative to our principal competitors are...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The sales growth position relative to our principal competitors is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The net profit position relative to our principal competitors is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The financial liquidity position relative to our principal competitors is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## **APPENDIX M: Statistical Controls**

Following the recommended guidelines established by Podsakoff et al. (2003), we conducted two types of analyses to diagnose the extent to which common method bias may be a problem. First, we conducted a Harman one-factor test (Harman 1976; Malhotra et al. 2006). Our results extracted five factors from the data, which corresponded to the latent variables in our study. The factors accounted for 64.04 percent of the variance with the first factor accounting for 38.15 percent. Since no single factor accounted for a majority of the covariance, this suggests common method bias might not pose a severe threat to the validity of our study (Harman 1976). Second, we used Lindell and Whitney's (2001) marker variable test. This technique uses a marker variable (e.g. "Alignment is good", which is a theoretically unrelated variable) to adjust the correlations of the model's core constructs (Lindell and Whitney 2001). Since we did not find high correlations between the "alignment for common method bias test" variable and any of the model's core constructs (the highest correlation was 0.33 with performance), we concluded common method bias was not particularly problematic in our study.

## **APPENDIX N: Pilot Study**

Before administering the full survey, we did an initial test of the overall instrument shown in Table N1. Because this was only intended as an initial test, we kept the first sample small. To collect these responses, we provided the survey's website link to a convenience sample of CIOs within the lead author's network<sup>52</sup>, on the lead author's

---

<sup>52</sup> E-mails were sent to CIOs the lead author knows personally and also to working friends of the lead author. These individuals then forwarded the link to their CIOs.

LinkedIn profile, as a discussion on LinkedIn's CIO Network group, and through *Research Now* (a national market research company; please see the Research Design section for complete details)<sup>53</sup>. Since we were trying to capture the most senior IT professional in the company, acceptable titles include CIO, Director of IT, Vice President of IT, and Chief Technology Officer (Armstrong and Sambamurthy 1999; Banker et al. 2011; Grover et al. 1993; Preston and Karahanna 2009). We also asked these CIOs (the other titles are included in this categorization here and throughout the essay) to forward this link to CIOs in their network (i.e. snowballing) to increase the sample size for this pilot study. The demographic statistics for the respondents are illustrated in Table N2.

<b>Table N1: Items for Pre-test and Pilot Study for Essay 3</b>		
<b>Construct</b>	<b>Item ID</b>	<b>Item</b>
Business Knowledge (Expert Power)	BK1	Your firm's present and future products, markets, business strategies, and general business practices
	BK2	Your industry's practices
	BK3	Your firm's competitors
Technical Knowledge (Expert Power)	TK1	Information systems in general
	TK2	Information systems within your firm
	TK3	How IT may be used for strategic advantage
	TK4	Emerging technologies
	TK5	Competitors' use of IT
	TK6	Systems development processes
	TK7	Difficulties of developing information systems
	TK8	Costs associated with information systems
	TK9	How IT fits into your firm's overall strategy
	TK10	Information systems support of the business processes within your firm
Reporting Structure (Structural)	RS1	Which of the following best describes your involvement with your executive team?
	RS2	How many reporting levels are between you and the CEO?

<sup>53</sup><http://www.Researchnow.com/>

**Table N1: Items for Pre-test and Pilot Study for Essay 3**

<b>Construct</b>	<b>Item ID</b>	<b>Item</b>
Power)	RS3	I interact with executive team members within my firm on a formal basis (for example, official meetings, work-related phone calls, etc.)
Managerial Ties/Social Systems of Knowing (Prestige Power)	PP1	Please indicate the extent to which you have utilized networks and connections from executive teams at customer or potential customer firms
	PP2	Please indicate the extent to which you have utilized networks and connections from executive teams at supplier firms
	PP3	Please indicate the extent to which you have utilized networks and connections from executive teams at competitor firms
	PP4	Please indicate the extent to which you have utilized networks and connections from informal contacts with executive team members within my own firm (for example, at the coffee machine, in the hall)
	PP5	Please indicate the extent to which you have utilized networks and connections from socialization with the executive team members within my own firm (for example, social gatherings, golf, tennis, etc)
Social Astuteness (Political Skill)	SA1	I understand people very well.
	SA2	I am particularly good at sensing the motivations and hidden agendas of others.
	SA3	I have good intuition or savvy about how to present myself to others.
	SA4	I always seem to instinctively know the right things to say or do to influence others.
	SA5	I pay close attention to people's facial expressions.
Interpersonal Influence (Political Skill)	II1	I am able to make most people feel comfortable and at ease around me.
	II2	I am able to communicate easily and effectively with others.
	II3	It is easy for me to develop good rapport with most people.
	II4	I am good at getting people to like me.
Network Ability (Political Skill)	NA1	I spend a lot of time and effort at work networking with others.
	NA2	I am good at building relationships with influential people at work.
	NA3	I have developed a large network of colleagues and associates at work whom I can call on for support when I really need to get things done.
	NA4	At work, I know a lot of important people and am well connected.



**Table N1: Items for Pre-test and Pilot Study for Essay 3**

<b>Construct</b>	<b>Item ID</b>	<b>Item</b>
	NA5	I spend a lot of time at work developing connections with others.
	NA6	I am good at using my connections and network to make things happen at work.
Apparent Sincerity (Political Skill)	AS1	When communicating with others, I try to be genuine in what I say and do.
	AS2	It is important that people believe I am sincere in what I say and do.
	AS3	I try to show a genuine interest in other people.
Executive Team Commitment to Technical IT Initiatives	TA1	I guide the decision-making process our executive team uses concerning the <i>IT architecture</i> .
	TA2	I make decisions about the <i>IT architecture</i> on behalf of our executive team.
	TA3	Our executive team follows my advice about how the <i>IT architecture</i> should be designed.
	TA4	My advice impacts the <i>IT architecture</i> decisions for the firm.
	TIV1	I guide the decision-making process our executive team uses concerning <i>IT investments</i> .
	TIV2	I make decisions about <i>IT investments</i> on behalf of our executive team.
	TIV3	Our executive team follows my advice on <i>investing in IT</i> .
	TIV4	My advice impacts the <i>IT investment</i> decisions for the firm.
	TIF1	I guide the decision-making process our executive team uses concerning the <i>IT infrastructure</i> .
	TIF2	I make decisions about the <i>IT infrastructure</i> on behalf of our executive team.
	TIF3	Our executive team follows my advice about how the <i>IT infrastructure</i> should be designed.
	TIF4	My advice impacts the <i>IT infrastructure</i> decisions for the firm.
	TAD1	I guide the decision-making process our executive team uses concerning <i>application development</i> .
	TAD2	I make decisions about <i>application development</i> on behalf of our executive team.
	TAD3	Our executive team follows my advice on managing <i>application development</i> .
	TAD4	My advice impacts the <i>application development</i> decisions for the firm.
	TO1	I guide the decision-making process our executive team uses concerning <i>IT outsourcing</i> .

**Table N1: Items for Pre-test and Pilot Study for Essay 3**

<b>Construct</b>	<b>Item ID</b>	<b>Item</b>
	TO2	I make decisions about <i>IT outsourcing</i> on behalf of our executive team.
	TO3	Our executive team follows my advice on <i>IT outsourcing</i> .
	TO4	My advice impacts the <i>IT outsourcing</i> decisions for the firm.
Executive Team Commitment to Strategic IT Initiatives	SP1	I typically persuade our executive team to commit to strategic IT initiatives.
	SP2	I typically persuade our executive team to support and enhance the firm's strategy.
	SP3	I typically persuade our executive team that IT has potential to positively impact the firm's strategic direction.
	SF1	Our executive team follows my advice on strategic initiatives.
	SF2	Our executive team follows my advice on using IT to support and enhance the firm's strategy.
	SF3	Our executive team follows my advice on using IT to positively impact the firm's strategic direction.
	SM1	I make decisions for our executive team in regard to strategic IT initiatives.
	SM2	I make decisions for our executive team in regard to using IT to support and enhance the firm's strategy.
	SM3	I make decisions for our executive team in regard to using IT to positively impact the firm's strategic direction.
	SA1	My advice impacts executive team decisions on strategic IT initiatives.
	SA2	My advice impacts executive team decisions on using IT to support and enhance the firm's strategy.
	SA3	My advice impacts executive team decisions on using IT to positively impact the firm's strategic direction.

**Table N2: Demographic Statistics for Essay 3 Pilot (n=35)**

<b>Characteristic</b>		<b>Frequency</b>		
Gender	Male	32		
	Female	1		
	Unreported	2		
College Education	Average = 5.6 years			
Experience		Industry	CIO	IT
	<1 year	2	2	
	1-5 years	8	13	
	6-10 years	10	9	2
	11-15 years	8	6	5

<b>Table N2: Demographic Statistics for Essay 3 Pilot (n=35)</b>				
<b>Characteristic</b>		<b>Frequency</b>		
	16+ years	6	4	26
Status	Direct Report to CEO	14		
	One Level to CEO	16		
	2+ Levels to CEO	5		
Age	Average = 51.8			
Firm Type	Public	13		
	Private	17		
	Unreported	5		
Firm Size (revenue in \$millions)	<100	9		
	101-500	8		
	501-1000	5		
	>1000	10		
Industry	Manufacturing	7		
	Service	7		
	Other	21		

**Pilot Study Reliability, Convergent Validity, and Discriminant Validity Analyses**

Upon collecting measures for all the constructs, we verified the unidimensionality of the variables by running an exploratory factor analysis (EFA) and checking the mean, skewness, kurtosis, loadings, and breadth of the constructs (Noar 2003). We used SPSS 15.0 for Windows Grad Pack (LEADTOOLS 2006) to run this analysis. While coefficient alpha (i.e. Cronbach's alpha) is one of many ways to perform a reliability analysis (Cronbach and Shavelson 2004), it is standard in most reliability discussions and is considered acceptable between 0.50 and 0.60 during the early stages of research (Nunnally 1967). Since the constructs are established, we chose to follow Moore and Benbasat's (1991) minimum reliability range of 0.70 to 0.80. We also looked for any severe nonnormality issues (skewness > 2, kurtosis > 7) (Fabrigar et al. 1999). Table N3 reveals satisfactory psychometric properties for all the measures except structural and prestige power.

<b>Table N3: EFA Results for Essay 3 Pilot Study</b>						
<b>Construct</b>	<b>Reliability (alpha)</b>	<b>AVE</b>	<b>Mean</b>	<b>St. Dev</b>	<b>Skewness (error)</b>	<b>Kurtosis (error)</b>
Business Knowledge (Expert Power)	0.80	0.71	12.46	1.92	-0.68 (0.40)	0.66 (0.78)
Technical Knowledge (Expert Power)	0.86	0.44	43.91	3.78	-0.05 (0.40)	-1.15 (0.78)
Structural Power	0.47	0.49	12.91	1.60	-0.08 (0.40)	-1.37 (0.78)
Prestige Power	0.60	0.65	20.43	4.61	0.64 (0.40)	1.44 (0.78)
Political Skill	0.91	0.54	72.86	8.62	-0.29 (0.40)	-0.29 (0.78)
Commitment to Strategic IT Initiatives	0.90	0.69	51.41	6.02	0.09 (0.41)	-1.14 (0.81)
CIO Persuading Executive Team	0.90		13.51	1.52	-0.27 (0.40)	-1.64 (0.78)
Executive Team Following Advice	0.88		12.66	1.64	0.29 (0.40)	-0.61 (0.78)
CIO Making Decisions	0.99		11.94	2.79	-0.96 (0.41)	0.45 (0.81)
Advice Impacting Executive Team	1.00		13.31	1.69	-0.31 (0.41)	-0.86 (0.81)
Commitment to Technical IT Initiatives	0.93	0.66	87.51	9.65	-0.17 (0.40)	-1.35 (0.78)
IT Architecture	0.71		17.89	2.21	-0.65 (0.40)	-0.37 (0.78)
IT Investments	0.80		17.23	2.31	-0.36 (0.40)	-0.86 (0.78)
IT Infrastructure	0.93		17.83	2.76	-1.76 (0.40)	4.01 (0.78)
IT Application Development	0.87		17.14	2.29	-0.19 (0.40)	-0.98 (0.78)
IT Outsourcing	0.94		17.43	2.68	-0.47 (0.40)	-1.17 (0.78)

Eigenvalues are the sum of the squared loadings and reflect the variance of the factors. Eigenvalues greater than 1 indicate the variance of the factor is larger than the variance of the indicators and should be counted as a factor (Fabrigar et al. 1999)<sup>54</sup>. Table N4 shows satisfactory loadings. For example, for each of the loadings (we had to break down the analyses due to the large number of items and small sample size), the factors

<sup>54</sup>We acknowledge using eigenvalues and % variance explained has significant problems (e. G. it is arbitrary to some extent) (Fabrigar et al. 1999).

accounted for a reasonable amount of variance where only a few accounted for 10% or less (which isn't entirely unexpected considering there are more than 10 factors being analyzed when the TD and SK constructs are separated).

Then, we conducted analysis to investigate convergent and discriminant validity for the constructs. These analyses were conducted in SmartPLS2.0 (Ringle et al. 2005). For convergent validity, we evaluated the loading of each item onto their specified factor (Chin and Frye 1996). First, we compared the coefficients for the indicators with the standard errors, where the loadings should be at least twice as much as the standard error (Anderson and Gerbing 1988). Second, a t-statistic of 1.69 or higher suggests that the item loading is significant at 0.05 ( $n=35$ ). All significant loadings are marked in Table N5. Out of 71 loadings, 10 were insignificant.

Following the evaluation of convergent validity, we evaluated discriminant validity using SPSS 15.0 for Windows Grad Pack (LEADTOOLS 2006). To do so, we entered all first-order factors in a correlation matrix. To assess discriminant validity, we compared cross factor correlations against the square root of the average variance extracted of each factor (Chin and Frye 1996). If the cross factor correlation exceeds the square root of the average variance extracted, there may be a lack of discriminant validity. The correlation matrix is illustrated in Table N6. Evaluating the correlation matrix suggests only six cross factor correlations (highlighted in yellow). The latent variable correlation matrix confirms there are no discriminant validity problems (Table N7).

**Table N4: EFA Loadings for the Essay 3 Pilot Study**

Item	Factor							
	1	2	3	4	5	6	7	8
TIF3	0.95	0.01	0.10	0.05	0.08	0.14	0.02	0.12
TIF4	0.88	0.03	0.06	0.08	0.06	0.03	0.16	0.10
TIF1	0.83	0.06	0.10	0.03	0.00	0.09	0.09	0.28
TIF2	0.76	0.14	0.05	0.28	0.09	0.14	0.31	0.04
TK8	0.07	1.20	0.19	0.10	0.10	0.26	0.31	0.13
TK7	0.11	0.79	0.06	0.08	0.14	0.22	0.23	0.17
TK1	0.32	0.70	0.10	0.02	0.13	0.08	0.11	0.26
TK10	0.18	0.61	0.14	0.37	0.05	0.07	0.04	0.08
TK9	0.19	0.55	0.18	0.48	0.01	0.09	0.07	0.01
TK2	0.51	0.55	0.11	0.09	0.01	0.11	0.22	0.03
TA1	0.16	0.41	0.22	0.02	0.09	0.02	0.06	0.08
TA4	0.03	0.02	1.04	0.15	0.04	0.16	0.13	0.24
TA3	0.09	0.05	0.91	0.06	0.11	0.07	0.02	0.21
TIV3	0.05	0.22	0.84	0.13	0.07	0.04	0.15	0.26
TIV4	0.21	0.24	0.50	0.12	0.02	0.04	0.34	0.16
TIV1	0.26	0.19	0.48	0.13	0.12	0.18	0.02	0.19
BK1	0.01	0.00	0.09	0.78	0.13	0.10	0.15	0.19
TK5	0.01	0.16	0.13	0.66	0.01	0.04	0.12	0.05
BK2	0.09	0.05	0.02	0.65	0.16	0.33	0.09	0.03
BK3	0.08	0.10	0.01	0.62	0.03	0.09	0.13	0.10
TK3	0.10	0.20	0.26	0.61	0.15	0.18	0.39	0.19

Item	Factor				
	1	2	3	4	5
SM2	1.00	0.01	0.11	0.10	0.10
SM1	0.98	0.04	0.12	0.02	0.08
SM3	0.88	0.05	0.06	0.01	0.15
SP3	0.15	1.01	0.18	0.08	0.02
SP2	0.17	0.72	0.18	0.04	0.05
SP1	0.19	0.72	0.28	0.05	0.03
PP3	0.30	0.38	0.13	0.36	0.02
SF3	0.04	0.03	0.96	0.05	0.05
SF2	0.02	0.12	0.79	0.08	0.06
PP1	0.17	0.10	0.07	0.94	0.14
PP2	0.28	0.01	0.12	0.79	0.20
PP5	0.08	0.21	0.05	0.29	0.07
PP4	0.08	0.12	0.06	0.26	0.03
SF1	0.11	0.00	0.06	0.02	0.93

Item	Factor			
	1	2	3	4
NA1	0.81	0.06	-0.17	0.11
NA6	0.79	0.04	0.33	0.10
SA1	0.78	0.02	0.17	0.09
NA2	0.77	0.17	0.01	0.16
NA3	0.75	0.10	0.09	0.15
SA2	0.71	0.23	0.19	0.01
II3	0.66	0.30	0.04	0.26
NA5	0.64	0.07	-0.14	0.12
SA3	0.52	0.10	-0.17	0.52
SA4	0.49	0.25	-0.13	0.17
II1	0.21	1.12	0.09	0.23
II2	0.03	0.71	0.40	0.05
II4	0.13	0.69	-0.36	0.13
AS3	0.02	0.48	0.40	0.14
AS2	0.12	0.17	0.74	0.17
RS3	0.07	0.13	0.57	0.09
AS1	0.22	0.09	0.54	0.06
NA4	0.21	0.06	0.22	0.15
RS1	0.16	0.12	0.66	0.68
RS2	0.04	0.13	0.11	0.49
SA5	0.26	0.23	0.02	0.41

**Table N4: EFA Loadings for the Essay 3 Pilot Study**

Item	Factor								Item	Factor					Item	Factor			
	1	2	3	4	5	6	7	8		1	2	3	4	5		1	2	3	4
TK4	0.27	0.15	0.01	0.52	0.13	0.02	0.08	0.15											
TO1	0.06	0.01	0.22	0.01	1.06	0.04	0.03	0.12											
TO3	0.06	0.18	0.13	0.11	0.87	0.12	0.01	0.07											
TO4	0.01	0.14	0.19	0.18	0.78	0.04	0.01	0.29											
TAD1	0.14	0.07	0.09	0.05	0.11	1.03	0.03	0.11											
TAD4	0.08	0.12	0.14	0.08	0.12	0.78	0.21	0.13											
TAD3	0.03	0.06	0.29	0.08	0.08	0.63	0.15	0.49											
TO2	0.21	0.20	0.06	0.11	0.31	0.03	0.87	0.14											
TA2	0.18	0.27	0.02	0.06	0.20	0.11	0.82	0.17											
TIV2	0.31	0.08	0.04	0.05	0.30	0.04	0.59	0.09											
TAD2	0.01	0.13	0.07	0.07	0.05	0.28	0.58	0.22											
TK6	0.10	0.41	0.45	0.05	0.19	0.02	0.27	0.72											
Eigenvalues	9.60	5.73	2.8	2.67	2.38	1.60	1.31	1.08	Eigenvalues	5.27	2.23	1.97	1.31	1.04	Eigenvalues	7.59	2.72	1.69	1.54
% Variance Explained <sup>55</sup>	29.08	17.36	8.49	7.2	4.83	3.97	3.27	2.87	% Variance Explained	37.65	15.94	14.09	9.34	7.40	% Variance Explained	35.14	12.94	8.04	7.33

Extraction Method: Maximum Likelihood; Rotation Method: Promax with Kaiser Normalization; Values less than 0.10 were suppressed and sorted by size

BK = Business Knowledge; TK = Technical Knowledge; RS = Structural Power; PP = Prestige Power; SA = Social Astuteness; II = Interpersonal Influence; NA = Network Ability; AS = Apparent Sincerity; SP = Strategic IT Initiatives Persuading Executive Team; SF = Strategic IT Initiatives Executive Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Architecture; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing

<sup>55</sup> Variance Explained = eigenvalue/total # of factors

**Table N5: Convergent Validity Test for the Essay 3 Pilot Study**

Item	t-value (STE)	Item	t-value (STE)	Item	t-value (STE)	Item	t-value (STE)
	2.11** (0.28)		1.63* (0.35)		2.68** (0.29)		1.95** (0.30)
AS1	1.11 (0.32)	NA1	1.55* (0.32)	RS1	1.88** (0.35)	SF1	2.13** (0.33)
AS2	2.01** (0.33)	NA2	2.57** (0.33)	RS2	0.72 (0.51)	SF2	2.13** (0.32)
AS3	2.06** (0.33)	NA3	0.21 (0.31)	RS3	2.19** (0.32)	SF3	2.29** (0.32)
BK1	3.21** (0.23)	NA4	1.83** (0.37)	SA1	2.28** (0.26)	SM1	2.38** (0.31)
BK2	3.02** (0.24)	NA5	2.69** (0.31)	SA2	1.67* (0.33)	SM2	2.85** (0.29)
BK3	1.00 (0.41)	NA6	2.55** (0.32)	SA3	1.83** (0.31)	SM3	2.66** (0.25)
II1	1.41* (0.28)	PP1	2.33** (0.36)	SA4	2.38** (0.29)	SP1	2.89** (0.26)
II2	2.08** (0.32)	PP2	1.82** (0.34)	SA5	2.80** (0.29)	SP2	2.21** (0.28)
II3	0.98 (0.37)	PP3	0.04 (0.36)	SA1	2.80** (0.29)	SP3	
II4		PP4	1.94** (0.38)	SA2	2.80** (0.30)		
		PP5		SA3			

\*significant at 0.1

\*\* significant at 0.05

STE = Standard Error

BK = Business Knowledge; TK = Technical Knowledge; RS = Structural Power; PP = Prestige Power; SA = Social Astuteness; II = Interpersonal Influence; NA = Network Ability; AS = Apparent Sincerity; SP = Strategic IT Initiatives Persuading Executive Team; SF = Strategic IT Initiatives Executive Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Architecture; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing

**Table N5 (cont): Convergent Validity Test for the Essay 3 Pilot Study**

Item	t-value (STE)	Item	t-value (STE)	Item	t-value (STE)
	1.37* (0.29)		3.15** (0.18)		1.3 (0.46)
TA1	3.74** (0.13)	TIF3	4.59** (0.15)	TK1	0.93 (0.49)
TA2	3.65** (0.17)	TIF4	3.77** (0.17)	TK2	2.15** (0.35)
TA3	2.38** (0.22)	TIV1	3.21** (0.18)	TK3	2.27** (0.34)
TA4	2.55** (0.22)	TIV2	3.28** (0.17)	TK4	0.79 (0.46)
TAD1	1.50* (0.24)	TIV3	3.90** (0.16)	TK5	1.83** (0.35)
TAD2	3.20** (0.20)	TIV4	3.05** (0.17)	TK6	1.46* (0.45)
TAD3	3.02** (0.21)	TO1	2.87** (0.18)	TK7	1.25 (0.46)
TAD4	3.34** (0.18)	TO2	3.37** (0.17)	TK8	1.74** (0.46)
TIF1	3.16** (0.18)	TO3	3.58** (0.16)	TK9	1.48* (0.45)
TIF2		TO4		TK10	

\*significant at 0.1; \*\* significant at 0.05; STE = Standard Error

BK = Business Knowledge; TK = Technical Knowledge; RS = Structural Power; PP = Prestige Power; SA = Social Astuteness; II = Interpersonal Influence; NA = Network Ability; AS = Apparent Sincerity; SP = Strategic IT Initiatives Persuading Executive Team; SF = Strategic IT Initiatives Executive Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Architecture; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing



**Table N6: Discriminant Validity Analysis for the Essay 3 Pilot Study**

	TA1	TA2	TA3	TA4	TIV1	TIV2	TIV3	TIV4	TIF1	TIF2	TIF3	TIF4	TAD1	TAD2
TA1	<b>.66</b>													
TA2	.17	<b>.66</b>												
TA3	.40	.39	<b>.66</b>											
TA4	.38	.15	.77	<b>.66</b>										
TIV1	.32	.25	.52	.47	<b>.66</b>									
TIV2	.18	.64	.33	.15	.41	<b>.66</b>								
TIV3	.16	.23	.65	.69	.50	.50	<b>.66</b>							
TIV4	.41	.44	.54	.65	.53	.43	.59	<b>.66</b>						
TIF1	.49	.32	.39	.30	.54	.35	.17	.55	<b>.66</b>					
TIF2	.16	.46	.24	.13	.41	.67	.36	.30	.61	<b>.66</b>				
TIF3	.20	.43	.30	.21	.36	.45	.23	.43	.74	.77	<b>.66</b>			
TIF4	.33	.50	.41	.28	.54	.63	.30	.61	.86	.79	.85	<b>.66</b>		
TAD1	.14	.24	.24	.05	.35	.26	.17	.29	.29	.10	.08	.32	<b>.66</b>	
TAD2	-.20	.36	.14	.02	.01	.61	.31	.21	-.10	.38	.16	.27	.33	<b>.66</b>
TAD3	.04	.34	.43	.22	.34	.41	.52	.29	.20	.43	.37	.39	.69	.53
TAD4	.11	.36	.27	.10	.22	.47	.25	.39	.35	.34	.30	.52	.87	.55
TO1	.18	.37	.25	.15	.38	.67	.36	.42	.30	.45	.27	.50	.50	.39
TO2	.16	.63	.39	.29	.38	.76	.56	.56	.13	.45	.16	.37	.31	.53
TO3	.26	.40	.49	.38	.48	.63	.53	.53	.32	.34	.21	.44	.51	.27
TO4	.28	.43	.50	.42	.51	.58	.50	.56	.33	.37	.32	.50	.49	.35
SP1	.26	-.18	.13	.22	.40	.32	.37	.13	.09	.14	.05	.13	.30	.08
SP2	.14	.05	.01	.12	.31	.28	.27	.10	.00	.18	.12	.09	.15	.26
SP3	.19	.20	-.01	.01	.32	.48	.27	.24	.08	.32	.23	.31	.34	.32
SF1	.01	.13	.32	.13	.40	.34	.45	.26	.12	.15	.07	.16	.38	.24
SF2	.05	.29	.30	.17	.53	.51	.52	.32	.30	.42	.18	.34	.45	.30
SF3	.12	.23	.45	.42	.53	.37	.59	.42	.16	.25	.05	.20	.36	.25
SM1	.05	.64	.25	.04	.09	<b>.68</b>	.25	.21	.05	.45	.35	.34	.12	<b>.68</b>
SM2	.05	.62	.33	.17	.14	<b>.69</b>	.39	.20	.00	.43	.30	.28	.06	<b>.66</b>
SM3	.05	.52	.32	.12	.21	<b>.67</b>	.41	.20	.01	.37	.28	.27	.11	.61

**Diagonals = square-root AVE**

Off-Diagonal = Correlations

**Cross-factor correlations that exceed the AVE (potential lack of discriminant validity)**

SP = Strategic IT Initiatives Persuading Executive Team; SF = Strategic IT Initiatives Executive Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Architecture; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing

**Table N6 (cont): Discriminant Validity Analysis for the Essay 3 Pilot Study**

	TAD3	TAD4	TO1	TO2	TO3	TO4	SP1	SP2	SP3	SF1	SF2	SF3	SM1	SM2	SM3
TAD3	<b>.66</b>														
TAD4	.77	<b>.66</b>													
TO1	.45	.61	<b>.66</b>												
TO2	.43	.45	.71	<b>.66</b>											
TO3	.43	.52	.88	.73	<b>.66</b>										
TO4	.55	.54	.87	.69	.81	<b>.66</b>									
SP1	.24	.26	.55	.30	.55	.45	<b>.69</b>								
SP2	.29	.17	.32	.30	.24	.37	.71	<b>.69</b>							
SP3	.40	.42	.62	.51	.47	.60	.70	.81	<b>.69</b>						
SF1	.45	.35	.47	.34	.50	.43	.36	.38	.37	<b>.69</b>					
SF2	.45	.43	.39	.51	.50	.33	.43	.45	.43	.65	<b>.69</b>				
SF3	.45	.34	.39	.51	.57	.41	.43	.45	.34	.65	.84	<b>.69</b>			
SM1	.42	.38	.45	.52	.30	.45	.12	.46	.49	.38	.29	.29	<b>.69</b>		
SM2	.40	.31	.38	.53	.29	.44	.18	.49	.47	.32	.33	.33	.96	<b>.69</b>	
SM3	.48	.34	.45	.49	.36	.47	.29	.58	.53	.53	.40	.46	.93	.93	<b>.69</b>

**Diagonals = square-root AVE**

Off-Diagonal = Correlations

**Cross-factor correlations that exceed the AVE (potential lack of discriminant validity)**

SP = Strategic IT Initiatives Persuading Executive Team; SF = Strategic IT Initiatives Executive Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Architecture; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing

**Table N6 (cont): Discriminant Validity Analysis for the Essay 3 Pilot Study**

	TA1	TA2	TA3	TA4	TIV1	TIV2	TIV3	TIV4	TIF1	TIF2
BK1	.14	-.18	-.03	.03	.19	-.26	.06	.01	.11	.02
BK2	.21	-.02	.17	.12	.09	.10	.10	.16	.11	.19
BK3	.21	-.06	.03	.17	.14	-.08	.15	.27	.08	.17
TK1	.37	.12	-.02	.17	.14	-.11	-.10	.26	.43	.22
TK2	.42	-.01	.08	.14	.35	.08	-.02	.29	.61	.29
TK3	.26	-.09	.05	-.11	-.03	-.16	-.11	-.06	.18	.12
TK4	.20	.23	.16	.10	.34	.17	.02	.02	.23	.42
TK5	.01	.15	.14	-.08	-.12	.14	.06	.00	-.05	.18
TK6	.35	.05	.50	.41	.40	.07	.32	.23	.10	.11
TK7	.38	.10	.14	.10	.12	-.06	.04	.28	.20	.07
TK8	.47	.19	.09	.16	.06	.02	-.02	.33	.23	.03
TK9	.45	-.03	.25	.32	.24	-.15	.19	.27	.20	.00
TK10	.34	-.01	.13	.28	.13	-.16	.14	.23	.09	-.04
PP1	.03	.00	-.15	-.18	-.22	.10	-.07	-.06	-.21	-.03
PP2	.05	-.07	.09	.02	.05	.03	.15	.06	-.05	.03
PP3	-.15	.13	-.02	.02	-.18	.06	-.01	.02	-.14	.00
PP4	-.06	.19	-.03	.03	-.05	-.07	.08	.06	.04	-.05
PP5	.23	-.11	-.15	-.21	-.07	.00	-.18	-.29	-.08	.05
RS1	.01	.04	.16	.10	.19	-.02	.22	.20	.14	.01
RS2	-.18	.18	-.07	.01	.11	.23	.18	.22	.22	.44
RS3	-.03	-.19	-.02	.11	.10	-.08	.28	.12	.08	-.10
AS2	.14	-.04	.14	.12	.12	-.17	.13	.26	.18	.01
SA2	.13	-.03	.01	.11	.07	-.04	.02	.33	.05	-.08
AS3	.33	-.10	.17	.17	.21	-.19	.12	.14	.16	-.14
SA1	.12	-.01	.27	.20	.14	-.08	.15	.17	-.04	-.15
II1	-.05	-.08	-.08	-.09	-.04	-.12	-.04	.09	.06	-.08
NA6	.05	-.16	.13	.05	-.02	.14	.23	.05	-.09	-.01
II2	-.09	-.08	.02	-.07	-.04	-.11	.02	.10	.01	-.07
SA4	.06	-.10	-.05	-.15	-.11	.05	-.01	-.11	-.19	.02
NA4	-.03	-.15	.08	.19	.04	-.03	.24	.01	-.18	.08
NA2	-.14	-.13	.03	.02	.03	.04	.14	-.12	-.34	-.01
II3	.15	.00	.06	-.10	-.10	.01	-.16	.03	.02	-.04
NA1	-.16	-.28	-.12	-.10	-.13	-.02	-.10	-.23	-.30	-.24
AS1	.23	.12	.03	-.03	-.02	.07	-.02	.05	-.05	-.18
SA5	.10	.06	.18	.09	.16	.00	.18	.21	.01	.10
II4	-.01	.00	.01	-.12	-.17	-.02	.01	-.05	-.04	.04
SA3	-.05	-.10	.05	-.09	-.12	.00	.09	-.06	-.16	-.02
NA5	-.09	-.28	-.10	.01	-.04	.00	.05	-.06	-.14	-.01
NA3	.15	-.01	.09	.07	-.02	.24	.15	.19	.08	.21

**Diagonals = square-root AVE; Off-Diagonal = Correlations; Cross-factor correlations that exceed the AVE (potential lack of discriminant validity)**

SP = Strategic IT Initiatives Persuading Executive Team; SF = Strategic IT Initiatives Executive Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Architecture; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing

<b>Table N6 (cont): Discriminant Validity Analysis for the Essay 3 Pilot Study</b>													
	TIF3	TIF4	TAD1	TAD2	TAD3	TAD4	TO1	TO2	TO3	TO4			
BK1	.08	-.11		-.24	-.37	-.13	-.33	-.27	-.15	-.15	-.22		
BK2	.24	.09		-.26	.14	-.07	-.14	.06	.18	.09	.04		
BK3	.13	.03		.04	.12	.11	.04	.03	.16	.04	.03		
TK1	.36	.31		.13	-.14	.17	.19	.02	-.10	-.06	.12		
TK2	.46	.53		.23	-.18	.10	.24	.14	-.08	.09	.21		
TK3	.11	.06		.11	-.08	.12	.15	.01	-.18	.00	-.07		
TK4	.37	.27		.01	.11	.21	.07	.04	.10	.07	.09		
TK5	.17	-.01		-.04	.35	.12	.06	.02	.11	.08	-.09		
TK6	.08	.15		.21	-.06	.46	.28	.27	.18	.24	.41		
TK7	.05	.15		.23	-.09	.23	.27	.10	.17	.09	.12		
TK8	.11	.15		-.07	-.20	-.09	.05	.15	.24	.10	.24		
TK9	.03	.02		.07	-.28	.05	.04	-.01	.07	.15	.07		
TK10	-.01	-.02		-.07	-.28	-.01	-.02	-.05	.08	.02	.02		
PP1	-.12	-.11		.08	.36	.08	.11	-.02	-.01	.02	-.15		
PP2	-.01	-.06		.11	.12	.17	.02	.04	.05	.20	.00		
PP3	-.06	-.12		-.20	.24	-.07	-.12	-.11	.02	-.08	-.15		
PP4	.04	-.06		.08	-.18	.17	.11	.05	.05	.08	.07		
PP5	.04	-.09		-.13	-.03	-.05	-.19	-.20	-.21	-.16	-.26		
RS1	.21	.07		.24	-.18	.33	.23	.12	.07	.20	.16		
RS2	.46	.32		-.03	.09	.16	.11	.01	.17	.04	-.09		
RS3	-.03	-.01		.21	-.20	.17	.16	.16	.04	.15	.25		
AS2	.17	.10		.10	-.21	.09	.12	.12	.03	.07	.19		
SA2	.07	.06		.00	.04	-.04	.09	.07	.03	.02	.07		
AS3	-.14	-.04		.42	-.20	.23	.33	.07	-.06	.16	.04		
SA1	-.16	-.05		.13	.07	.04	.13	-.01	.01	.04	.06		
II1	-.22	-.03		.12	-.12	-.10	.15	.11	.06	.13	-.10		
NA6	-.15	.00		.24	.18	.20	.35	.39	.20	.41	.22		
II2	-.07	-.01		.08	-.12	-.02	.14	.16	.04	.19	.01		
SA4	-.23	-.13		.23	.33	.13	.31	.04	.02	.00	-.17		
NA4	-.05	-.12		-.32	.00	-.10	-.19	.03	-.02	-.10	.03		
NA2	-.20	-.18		-.09	.21	.04	-.03	.13	.07	.03	.09		
II3	-.20	.00		.13	.15	-.10	.17	.18	.12	.20	.01		
NA1	-.38	-.30		.10	.23	-.10	.09	.04	-.07	.01	-.11		
AS1	-.18	-.07		.08	-.26	-.10	.06	.34	.25	.36	.27		
SA5	-.05	.05		.17	.09	.24	.22	-.01	.18	.08	-.05		
II4	-.20	-.09		.03	.03	-.03	.13	-.07	.01	-.04	-.27		
SA3	-.21	-.16		.20	.19	.22	.26	-.01	.05	-.01	-.13		
NA5	-.08	-.10		.07	.18	.07	.17	.07	-.03	.03	-.09		
NA3	-.02	.20		.11	.27	.05	.33	.31	.24	.26	.10		

**Diagonals = square-root AVE; Off-Diagonal = Correlations; Cross-factor correlations that exceed the AVE (potential lack of discriminant validity); SP = Strategic IT Init. Persuading Executive Team; SF = Strategic IT Initiatives Executive Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Arch.; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing**

Table N6 (cont): Discriminant Validity Analysis for the Essay 3 Pilot Study																						
	SP1	SP2	SP3	SF1	SF2	SF3	SM1	SM2	SM3	BK1	BK2	BK3	TK1	TK2	TK3	TK4	TK5	TK6	TK7	TK8	TK9	TK10
BK1	.12	.26	.03	.02	.24	.24	-.29	-.24	-.14	<b>.84</b>												
BK2	.26	.36	.17	.11	.17	.25	.28	.27	.34	.54	<b>.84</b>											
BK3	.24	.36	.27	.05	.18	.25	.10	.09	.09	.50	.69	<b>.84</b>										
TK1	-.03	.22	.20	-.06	-.01	-.01	.00	-.07	-.07	.27	.12	.27	<b>.66</b>									
TK2	.16	.07	.25	-.25	.05	-.14	-.19	-.19	-.22	.23	.10	.17	.62	<b>.66</b>								
TK3	.07	.18	.09	.23	.21	.21	.06	.00	.11	.52	.45	.39	.49	.30	<b>.66</b>							
TK4	.16	.45	.24	.11	.26	.34	.30	.29	.31	.42	.39	.25	.47	.23	.56	<b>.66</b>						
TK5	.04	.13	-.03	.21	.08	.14	.48	.41	.46	.25	.64	.55	-.08	-.23	.47	.36	<b>.66</b>					
TK6	.19	.16	.17	.30	.00	.22	.11	.11	.24	.10	.08	.04	.30	.15	.31	.37	.04	<b>.66</b>				
TK7	-.02	.01	.10	.07	.03	.03	-.21	-.27	-.20	.30	.07	.12	.55	.33	.49	.33	-.01	.61	<b>.66</b>			
TK8	.07	.18	.28	-.18	-.16	-.16	.00	.00	-.05	.26	.29	.28	.57	.54	.34	.26	.02	.36	.62	<b>.66</b>		
TK9	.21	.16	.12	-.07	.15	.23	-.25	-.18	-.17	.66	.40	.52	.44	.49	.59	.41	.25	.41	.55	.67	<b>.66</b>	
TK10	.16	.28	.18	-.05	.16	.25	-.19	-.12	-.06	.61	.34	.31	.49	.36	.54	.43	.04	.35	.60	.63	.77	<b>.66</b>
PP1	-.02	.12	.06	.18	.19	.30	.31	.24	.32	.09	.27	.27	-.02	-.24	.34	.19	.42	-.20	-.17	-.31	-.06	-.02
PP2	-.23	.01	-.06	.38	.29	.43	-.05	-.12	.04	.33	.29	.21	-.04	-.20	.34	.26	.40	.01	.05	-.26	.14	.14
PP3	-.22	-.06	-.25	.09	-.01	.17	.26	.23	.22	-.05	.19	.18	-.03	-.37	.01	.08	.41	-.13	-.31	-.15	-.07	-.15
PP4	.03	.16	.11	.05	.01	.06	.07	.11	.12	.01	-.04	.17	.21	.02	.07	-.04	.10	-.03	-.04	.28	.25	.19
PP5	.13	.14	.05	.01	.06	.02	.00	.00	.04	.12	.20	.19	.01	.08	.17	.25	.31	-.13	-.16	-.05	.11	-.03
RS1	.23	.19	.21	.19	.31	.31	.00	.04	.15	.40	.23	.34	.10	.27	.26	.06	.12	.10	.07	.15	.41	.29
RS2	-.05	-.06	.07	.01	.28	.14	.10	.10	.03	.05	.14	.27	.11	.14	-.08	.07	.09	-.34	-.18	-.10	-.07	-.12
RS3	.24	.12	.22	.07	.17	.17	-.21	-.16	-.13	.08	-.20	-.12	-.01	.16	-.16	-.31	-.49	.02	.04	.03	.09	.05
AS2	.13	.14	.22	.10	.03	-.08	-.15	-.14	-.11	.40	.19	.28	.27	.35	.41	.03	.05	.35	<b>.58</b>	.53	.51	.47
SA2	.07	.08	.07	.04	-.10	.11	.15	.10	.14	.08	.23	.17	.08	-.03	.08	.11	.09	.16	.09	.15	.07	.07
AS3	.25	.15	.07	.21	.28	.35	-.20	-.20	-.08	.40	.07	.21	.36	.22	.59	.21	.04	.43	.57	.25	.61	.55
SA1	.00	.05	.01	.27	.16	.29	.14	.14	.16	.11	.14	.05	.00	-.12	.34	.16	.05	.26	.22	.03	.14	.21
III	.03	-.08	-.07	.13	.20	.20	-.21	-.25	-.14	.24	.19	.11	.20	.05	.51	.06	.05	.11	.48	.23	.32	.49
NA6	.46	.16	.32	.29	.22	.30	.10	.10	.20	.00	.21	.11	-.18	-.06	.25	-.07	.13	.20	.10	.02	.14	.07
II2	.07	-.10	.04	.16	.15	.15	-.15	-.20	-.08	.36	.34	.22	.16	.20	.56	.08	.17	.19	.45	.32	.43	.45
SA4	.11	.05	.02	.07	.23	.23	.18	.17	.18	.12	.18	.22	-.03	-.11	.49	.16	.36	.11	.16	-.12	.21	.18
NA4	.03	-.02	.02	.02	-.09	-.09	.12	.19	.15	.17	.22	.22	.10	.06	.21	-.04	.05	.31	.11	.21	.20	.20
NA2	.16	.21	.17	.27	.23	.35	.30	.33	.40	.08	.25	.14	-.18	-.25	.23	.11	.06	.09	-.17	-.20	-.10	.09
II3	-.01	-.09	-.03	.16	.16	.22	.08	.00	.05	.07	.36	.18	-.01	-.08	.46	.10	.27	.02	.23	.07	.11	.12
NA1	.18	.05	-.12	.19	.17	.27	.04	.04	.11	-.07	.13	-.11	-.29	-.32	.13	.06	.14	-.02	-.10	-.29	-.13	.01
AS1	.34	.19	.35	.17	.22	.22	.00	.00	.07	.08	.07	-.13	.02	.07	.15	-.08	-.27	.05	.28	.33	.17	.34
SA5	.00	-.01	.01	.23	.46	.51	-.12	-.11	-.04	.40	.16	.18	.13	.02	.40	.30	.12	.27	.44	.09	.41	.46
II4	-.19	-.23	-.25	.13	.23	.23	.00	.00	.02	.16	.12	.08	-.03	-.15	.49	.15	.26	.02	.19	.02	.23	.29
SA3	-.07	-.14	-.14	.27	.35	.35	.09	.09	.12	.07	.08	.05	-.07	-.19	.34	.03	.14	.03	.07	-.21	.01	.07
NA5	.33	.23	.04	.20	.24	.40	.04	.04	.16	.13	.19	.06	-.14	-.22	.22	.29	.24	.09	-.01	-.18	.07	.21
NA3	.24	.10	.19	.17	.25	.31	.19	.18	.22	-.01	.22	.16	-.12	-.05	.32	.12	.20	.16	.20	.11	.17	.17

**Table N6 (cont): Discriminant Validity Analysis for the Essay 3 Pilot Study**

	PP1	PP2	PP3	PP4	PP5	RS1	RS2	RS3	AS2	SA2	AS3	SA1	III
PP1	<b>.65</b>												
PP2	.69	<b>.65</b>											
PP3	.44	.36	<b>.65</b>										
PP4	-.10	-.19	.16	<b>.65</b>									
PP5	.29	.26	.26	.11	<b>.65</b>								
RS1	.03	.04	-.21	.51	.12	<b>.70</b>							
RS2	.20	.10	.08	.23	.16	.41	<b>.70</b>						
RS3	-.35	-.19	-.46	.11	-.40	.30	-.03	<b>.70</b>					
AS2	-.37	-.19	-.53	.17	-.27	.46	-.04	.32	<b>.54</b>				
SA2	.26	.08	.00	-.08	-.26	.14	.21	.12	.15	<b>.54</b>			
AS3	.05	.10	-.28	.18	-.16	.36	-.20	.33	.51	.15	<b>.54</b>		
SA1	.28	.22	-.19	-.25	-.38	-.02	-.08	.18	.29	.63	.47	<b>.54</b>	
III	.11	.12	-.07	.07	-.41	.04	-.08	.10	.32	.17	.59	.40	<b>.54</b>
NA6	.30	.19	-.22	-.06	-.20	.17	.06	.29	.20	.49	.37	.58	.40
II2	.09	.20	-.19	-.04	-.30	.27	.06	.20	.49	.28	.48	.47	.79
SA4	.53	.21	.05	-.18	-.03	.04	-.01	-.12	.07	.26	.54	.48	.42
NA4	-.10	-.20	-.07	-.09	-.24	.05	.06	.03	.42	.19	.20	.35	.22
NA2	.43	.22	.03	-.22	-.04	.08	.09	-.02	.02	.36	.14	.61	.20
II3	.46	.32	-.09	-.26	-.14	-.07	-.03	-.06	.13	.40	.38	.67	.58
NA1	.35	.29	.03	-.29	.06	-.10	-.15	.02	-.14	.35	.25	.50	.27
AS1	-.12	-.11	-.45	.06	-.06	.27	-.12	.41	.39	.07	.39	.25	.34
SA5	.28	.41	.12	-.18	.13	.19	.16	-.05	.17	.24	.44	.38	.34
II4	.41	.33	.30	-.01	-.07	-.04	.08	-.24	-.06	.23	.28	.44	.60
SA3	.46	.33	.12	-.21	-.03	.17	.25	-.01	-.05	.34	.30	.50	.29
NA5	.31	.35	.18	-.17	.15	.04	-.01	.04	-.09	.42	.27	.34	.19
NA3	.31	.10	-.06	-.08	-.08	.04	.10	.03	.20	.52	.32	.57	.45

Diagonals = square-root AVE; Off-Diagonal = Correlations; **Cross-factor correlations that exceed the AVE (potential lack of discriminant validity)**; SP = Strategic IT Init. Persuading Executive Team; SF = Strategic IT Initiatives Executive Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Arch.; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing

**Table N6 (cont): Discriminant Validity Analysis for the Essay 3 Pilot Study**

	NA6	II2	SA4	NA4	NA2	II3	NA1	AS1	SA5	II4	SA3	NA5	NA3
NA6	<b>.54</b>												
II2	.57	<b>.54</b>											
SA4	.47	.31	<b>.54</b>										
NA4	.23	.35	.35	<b>.54</b>									
NA2	.47	.30	.49	.56	<b>.54</b>								
II3	.65	.60	.56	.14	.47	<b>.54</b>							
NA1	.44	.23	.52	.08	.54	.54	<b>.54</b>						
AS1	.40	.45	.05	.08	.24	.39	.21	<b>.54</b>					
SA5	.30	.40	.49	.12	.36	.37	.32	.21	<b>.54</b>				
II4	.33	.46	.54	.19	.40	.47	.35	-.05	.52	<b>.54</b>			
SA3	.41	.30	.68	.27	.61	.48	.54	.09	.63	.67	<b>.54</b>		
NA5	.37	.16	.48	.01	.45	.26	.78	.06	.50	.40	.51	<b>.54</b>	
NA3	.75	.44	.54	.22	.48	.66	.52	.27	.44	.55	.41	.53	<b>.54</b>

Diagonals = square-root AVE; Off-Diagonal = Correlations; **Cross-factor correlations that exceed the AVE (potential lack of discriminant validity)**; SP = Strategic IT Init. Persuading Executive Team; SF = Strategic IT Initiatives Executive Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Arch.; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing

**Table N7: Discriminant Validity – Latent Variable Matrix for the Essay 3 Pilot Study**

	BK	TK	PS	PP	S	SP	T
BK	<b>0.84</b>						
TK	0.53	<b>0.66</b>					
PS	0.21	0.30	<b>0.54</b>				
PP	0.34	0.14	0.19	<b>0.65</b>			
S	0.38	0.30	0.36	0.34	<b>0.69</b>		
SP	0.29	0.10	0.27	0.05	0.25	<b>0.70</b>	
T	0.07	0.36	0.25	-0.08	0.48	0.28	<b>0.66</b>

Diagonals = square root AVE; Off-diagonals = correlations  
 BK = Business Knowledge; TK = Technical Knowledge; PS = Political Skill; PP = Prestige Power; S = Strategic IT Initiatives; SP = Structural Power; T = Technical IT Initiatives

Based on the first EFA results and the convergent and discriminant validity analyses, we then deleted a number of items and re-ran the reliability and validity analyses. As discussed earlier, Cronbach's alpha is standard in most reliability discussions and is considered acceptable between 0.50 and 0.60 during the early stages of research (Nunnally 1967) but a minimum reliability range of 0.70 to 0.80 is desirable (Moore and Benbasat 1991). We also looked for any severe nonnormality issues (skewness > 2, kurtosis > 7) (Fabrigar et al. 1999). Table N8 reveals no nonnormality problems and acceptable reliabilities for all constructs except structural power. Hence, we believe the distribution is appropriate for the statistical tests used in this study.

<b>Table N8: EFA Results after Removing Items for the Essay 3 Pilot Study</b>					
<b>Construct</b>	<b>Reliability (alpha)</b>	<b>Mean</b>	<b>St. Dev</b>	<b>Skewness (error)</b>	<b>Kurtosis (error)</b>
Business Knowledge (Expert Power)	0.80	12.46	1.92	-0.68 (0.40)	0.66 (0.78)
Technical Knowledge (Expert Power)	0.87	31.66	2.84	-0.32 (0.40)	-1.37 (0.78)
Structural Power	0.59	8.51	1.25	-0.42 (0.40)	-0.93 (0.78)
Prestige Power	0.82	7.49	2.90	-0.41 (0.40)	-0.55 (0.78)
Political Skill	0.91	72.86	8.62	-0.29 (0.40)	-0.29 (0.78)
Commitment to Strategic IT Initiatives	0.86	38.09	4.86	0.03 (0.41)	-1.17 (0.81)
CIO Persuading Executive Team	0.90	13.51	1.52	-0.27 (0.40)	-1.64 (0.78)
Exec. Team Following Advice	0.88	12.66	1.64	0.29 (0.40)	-0.61 (0.78)
CIO Making Decisions	0.99	11.94	2.79	-0.96 (0.41)	0.45 (0.81)
Commitment to Technical IT Initiatives	0.91	66.80	6.73	-0.31 (0.40)	-1.13 (0.78)
IT Architecture	0.76	13.54	1.77	-1.54 (0.40)	3.75 (0.78)
IT Investments	0.78	13.29	1.62	-0.71 (0.40)	-0.08 (0.78)
IT Infrastructure	0.93	13.51	2.03	-2.09 (0.40)	5.38 (0.78)
IT Application Development	0.91	13.17	1.60	-0.30 (0.40)	-0.56 (0.78)
IT Outsourcing	0.95	13.29	1.90	-0.65 (0.40)	-0.61 (0.78)



Eigenvalues are the sum of the squared loadings and reflect the variance of the factors. Eigenvalues greater than 1 indicate the variance of the factor is larger than the variance of the indicators and should be counted as a factor (Fabrigar et al. 1999)<sup>56</sup>. Table N9 shows satisfactory loadings. For example, for each of the loadings (we had to break down the analyses due to the large number of items and small sample size), the factors accounted for a reasonable amount of variance where only a few accounted for 10% or less (which isn't entirely unexpected considering there are more than 10 factors being analyzed when the TD and SK constructs are separated).

Table N9 shows the eigenvalues and % variance extracted are still satisfactory. Additionally, the CFA from SmartPLS 2.0 (Ringle et al. 2005) shown in Table N10 confirms all the constructs loaded appropriately. This suggests these items should be retained and will likely result in the appropriate reliability and validity statistics during the full survey.

**Table N9: EFA Loadings after Removing Items for the Essay 3 Pilot Study**

Item	Factor		Item	Factor			
	1	2		1	2	3	4
SF1	0.46	<b>0.27</b>	BK1	<b>0.27</b>	0.68	0.17	0.18
SF2	0.38	<b>0.20</b>	BK2	<b>0.12</b>	0.57	0.01	0.38
SF3	0.38	<b>0.29</b>	BK3	<b>0.27</b>	0.53	0.09	0.50
SM1	0.45	<b>0.44</b>	PP1	0.03	<b>0.42</b>	-0.67	0.12
SM2	0.38	<b>0.51</b>	PP2	0.09	<b>0.69</b>	-0.62	-
SM3	0.45	<b>0.55</b>	RS1	0.10	0.34	0.22	<b>0.36</b>
SP1	0.57	<b>0.40</b>	RS2	0.11	0.08	-0.25	<b>0.51</b>
SP2	0.32	<b>0.80</b>	TK1	1.00	0.03	0.04	0.00
SP3	0.60	<b>0.55</b>	TK10	0.49	0.55	<b>0.37</b>	0.13
TA1	<b>0.17</b>	0.06	TK2	0.62	0.04	<b>0.30</b>	0.14

<sup>56</sup>We acknowledge using eigenvalues and % variance explained has significant problems (e. G. it is arbitrary to some extent) (Fabrigar et al. 1999).

**Table N9: EFA Loadings after Removing Items for the Essay 3 Pilot Study**

Item	Factor		Item	Factor			
TA3	<b>0.25</b>	- 0.13	TK6	0.30	0.20	<b>0.29</b>	- 0.46
TA4	<b>0.14</b>	0.01	TK7	0.55	0.28	<b>0.31</b>	- 0.46
TAD1	<b>0.47</b>	- 0.30	TK8	0.58	0.18	<b>0.59</b>	0.05
TAD3	<b>0.45</b>	0.07	TK9	0.44	0.66	<b>0.50</b>	0.09
TAD4	<b>0.58</b>	- 0.30					
TIF1	<b>0.30</b>	- 0.44					
TIF3	<b>0.30</b>	- 0.24					
TIF4	<b>0.47</b>	- 0.37					
TIV1	<b>0.34</b>	0.09					
TIV3	<b>0.36</b>	0.14					
TIV4	<b>0.42</b>	- 0.21					
TO1	<b>1.00</b>	0.00					
TO3	<b>0.90</b>	0.09					
TO4	<b>0.87</b>	0.09					
Eigenvalues	9.56	2.24	Eigenvalues	4.85	2.64	1.60	1.07
% Variance	39.8		% Variance	34.6	18.8	11.4	
Explained	2	9.31	Explained	7	8	5	7.63

Extraction Method: Maximum Likelihood; Rotation Method: Promax with Kaiser Normalization; Values less than 0.10 were suppressed and sorted by size  
 BK = Business Knowledge; TK = Technical Knowledge; RS = Structural Power; PP = Prestige Power; SA = Social Astuteness; II = Interpersonal Influence; NA = Network Ability; AS = Apparent Sincerity; SP = Strategic IT Initiatives Persuading Executive Team; SF = Strategic IT Initiatives Executive Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Architecture; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing

**Table N10: CFA after Removing Items for the Essay 3 Pilot Study**

	AS	BK	II	NA	PP	SP (RS)	SA	SF
AS1	<b>.73</b>	.01	.32	.33	-.12	.13	.20	.23
AS2	<b>.75</b>	.31	.27	.07	-.29	.29	.16	.01
AS3	<b>.87</b>	.22	.53	.35	.09	.15	.53	.32
BK1	.38	<b>.73</b>	.26	.03	.25	.30	.24	.20
BK2	.13	<b>.92</b>	.28	.25	.31	.23	.18	.20
BK3	.16	<b>.87</b>	.16	.10	.26	.37	.16	.19
II1	.56	.20	<b>.92</b>	.39	.13	-.01	.44	.20
II2	.60	.35	<b>.85</b>	.46	.16	.21	.47	.17
II3	.41	.27	<b>.75</b>	.67	.42	-.06	.63	.20
II4	.11	.13	<b>.78</b>	.51	.40	.01	.67	.22
NA1	.18	.01	.40	<b>.78</b>	.34	-.14	.56	.24
NA2	.18	.21	.38	<b>.71</b>	.34	.10	.63	.32
NA3	.35	.17	.61	<b>.86</b>	.21	.07	.61	.28
NA4	.28	.24	.27	<b>.24</b>	-.17	.06	.31	-.07
NA5	.15	.16	.30	<b>.75</b>	.36	.02	.58	.32
NA6	.43	.15	.56	<b>.83</b>	.26	.14	.54	.30
PP1	-.13	.27	.30	.44	<b>.90</b>	.12	.47	.26
PP2	-.05	.32	.27	.29	<b>.94</b>	.08	.38	.41
RS1	.45	.36	.06	.08	.04	<b>.89</b>	.14	.31
RS2	-.17	.19	.00	.04	.16	<b>.78</b>	.13	.16
SA1	.45	.12	.57	.66	.27	-.06	<b>.72</b>	.26
SA2	.16	.20	.30	.56	.17	.20	<b>.49</b>	.02
SA3	.19	.08	.51	.61	.42	.24	<b>.87</b>	.36
SA4	.34	.21	.54	.61	.38	.02	<b>.77</b>	.20
SA5	.38	.26	.48	.48	.38	.21	<b>.82</b>	.46
SF1	.22	.08	.17	.30	.32	.14	.27	<b>.83</b>
SF2	.25	.22	.23	.29	.27	.35	.38	<b>.93</b>
SF3	.25	.29	.24	.42	.41	.28	.45	<b>.94</b>
SM1	-.36	.18	-.33	-.01	.19	.06	-.10	.16
SM2	-.36	.18	-.35	.00	.14	.07	-.10	.17
SM3	-.29	.22	-.29	.07	.22	.10	-.06	.27
SP1	.31	.26	-.03	.38	.01	.13	.01	.45
SP2	.20	.39	-.15	.20	.07	.10	-.02	.48
SP3	.25	.20	-.11	.20	-.01	.18	-.03	.42
TA1	.32	.23	-.01	-.02	.05	-.09	.08	.08
TA3	.15	.09	-.01	.03	-.01	.07	.15	.40
TA4	.12	.14	-.12	.02	-.07	.07	.03	.28
TAD1	.30	-.18	.11	.14	.11	.15	.22	.44
TAD3	.12	-.03	-.08	.10	.14	.31	.20	.50
TAD4	.25	-.14	.17	.28	.07	.21	.28	.41
TIF1	.13	.12	.02	-.17	-.13	.21	-.10	.21
TIF3	-.10	.19	-.21	-.19	-.06	.37	-.18	.11
TIF4	-.01	.03	-.04	-.06	-.09	.21	-.07	.26
TIV1	.15	.15	-.10	-.04	-.07	.18	.04	.55
TIV3	.10	.13	-.05	.14	.06	.24	.14	.59
TIV4	.17	.19	.05	-.01	.01	.24	.10	.38
TO1	.21	-.02	.10	.28	.02	.08	.00	.46
TO3	.25	.02	.13	.24	.13	.16	.04	.58

**Table N10: CFA after Removing Items for the Essay 3 Pilot Study**

	AS	BK	II	NA	PP	SP (RS)	SA	SF
TO4	.19	-.02	-.12	.09	-.07	.06	-.08	.43
TK1	.30	.24	.11	-.23	-.04	.13	.03	-.03
TK10	.59	.45	.43	.14	.08	.14	.31	.15
TK2	.26	.18	.01	-.21	-.24	.26	-.11	-.12
TK6	.37	.08	.11	.14	-.09	-.10	.22	.19
TK7	.61	.16	.42	.02	-.05	-.04	.30	.05
TK8	.43	.33	.20	-.12	-.31	.05	-.04	-.18
TK9	.56	.58	.34	.06	.06	.25	.25	.13

BK = Business Knowledge; TK = Technical Knowledge; NA = Network Ability; AS = Apparent Sincerity; SP = Strategic IT Initiatives Persuading Exec Team; SF = Strategic IT Initiatives Exec Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Architecture; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing

**Table N10 (cont): CFA after Removing Items for the Essay 3 Pilot Study**

	SM	SP	TA	TAD	TIF	TIV	TO	TK
AS1	-.18	.32	.14	.02	-.11	.01	.34	.22
AS2	-.24	.17	.16	.11	.16	.21	.13	.57
AS3	-.35	.18	.30	.36	-.02	.19	.10	.56
BK1	-.07	.15	.08	-.25	.03	.11	-.23	.44
BK2	.36	.29	.22	-.17	.16	.14	.07	.25
BK3	.06	.32	.19	.07	.09	.23	.04	.32
II1	-.42	-.04	-.08	.06	-.08	.01	.06	.33
II2	-.24	.00	-.07	.07	-.03	.03	.13	.40
II3	-.12	-.05	.07	.07	-.08	-.08	.14	.08
II4	-.22	-.25	-.05	.05	-.12	-.10	-.13	.08
NA1	.02	.05	-.16	.03	-.35	-.19	-.02	-.23
NA2	.02	.20	-.07	-.03	-.25	.01	.09	-.14
NA3	-.09	.20	.14	.18	.08	.13	.24	.12
NA4	-.16	.01	.07	-.22	-.12	.10	-.01	.23
NA5	.11	.23	-.08	.12	-.11	-.03	.00	-.05
NA6	.00	.35	.09	.28	-.09	.09	.36	.06
PP1	.17	.06	-.09	.10	-.16	-.14	-.05	-.21
PP2	.17	.00	.06	.11	-.04	.10	.09	-.04
RS1	.02	.23	.08	.29	.16	.24	.17	.27
RS2	.13	-.02	-.12	.09	.36	.20	-.01	-.10
SA1	-.14	.02	.22	.11	-.10	.18	.03	.13
SA2	-.02	.08	.11	.02	.06	.18	.06	.11
SA3	-.06	-.12	-.05	.25	-.19	-.05	-.05	-.07
SA4	.01	.07	-.04	.24	-.20	-.10	-.04	.07
SA5	-.07	.00	.14	.23	.00	.22	.01	.33
SF1	.20	.41	.14	.43	.12	.44	.49	-.04
SF2	.17	.48	.17	.48	.28	.54	.43	.04
SF3	.18	.45	.35	.41	.14	.61	.48	.08
SM1	<b>.99</b>	.25	-.07	.16	.15	.04	.20	-.25
SM2	<b>.99</b>	.28	-.03	.13	.12	.08	.19	-.25
SM3	<b>.99</b>	.34	-.04	.17	.12	.11	.23	-.23
SP1	.20	<b>.90</b>	.27	.29	.09	.35	.54	.15
SP2	.35	<b>.92</b>	.13	.22	.08	.27	.32	.20

<b>Table N10 (cont): CFA after Removing Items for the Essay 3 Pilot Study</b>								
	SM	SP	TA	TAD	TIF	TIV	TO	TK
SP3	.25	<b>.91</b>	.11	.42	.22	.33	.60	.25
TA1	-.14	.22	<b>.84</b>	.11	.35	.37	.25	.54
TA3	.23	.05	<b>.79</b>	.34	.38	.68	.43	.24
TA4	-.07	.13	<b>.80</b>	.13	.28	.72	.33	.31
TAD1	-.02	.29	.17	<b>.92</b>	.23	.34	.53	.16
TAD3	.36	.34	.22	<b>.89</b>	.35	.45	.50	.20
TAD4	.09	.31	.18	<b>.96</b>	.41	.35	.59	.22
TIF1	-.13	.06	.50	.31	<b>.91</b>	.53	.33	.38
TIF3	.32	.14	.28	.27	<b>.94</b>	.42	.28	.23
TIF4	.13	.19	.41	.45	<b>.96</b>	.60	.50	.27
TIV1	.09	.38	.50	.33	.50	<b>.83</b>	.48	.30
TIV3	.22	.34	.52	.34	.25	<b>.80</b>	.49	.12
TIV4	-.07	.16	.63	.35	.55	<b>.86</b>	.53	.36
TO1	.18	.54	.23	.57	.38	.47	<b>.97</b>	.13
TO3	.21	.47	.42	.53	.34	.61	<b>.95</b>	.13
TO4	.21	.52	.45	.57	.41	.63	<b>.94</b>	.25
TK1	-.26	.13	.27	.18	.39	.14	.03	<b>.75</b>
TK10	-.28	.23	.34	-.04	.02	.20	.00	<b>.76</b>
TK2	-.27	.17	.32	.21	.56	.27	.15	<b>.69</b>
TK6	.06	.19	.49	.34	.12	.38	.32	<b>.63</b>
TK7	-.24	.03	.30	.27	.13	.19	.11	<b>.79</b>
TK8	-.17	.19	.36	-.04	.17	.16	.17	<b>.82</b>
TK9	-.17	.18	.45	.06	.08	.29	.07	<b>.81</b>

BK = Business Knowledge; TK = Technical Knowledge; NA = Network Ability; AS = Apparent Sincerity; SP = Strategic IT Initiatives Persuading Exec Team; SF = Strategic IT Initiatives Exec Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Architecture; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing

Then, we conducted analysis to investigate convergent and divergent validity for the constructs. Again, these analyses were conducted in SmartPLS 2.0(Ringle et al. 2005), using the same criteria as for the first analysis. All significant loadings are marked in Table N11. Out of 56 loadings, 2 were insignificant. However, we kept these two items (AS2 and NA4) for theoretical reasons, even though they may not be meaningful in this context.

<b>Table N11: Convergent Validity Test after Removing Items for the Essay 3 Pilot Study</b>							
Item	t-value (STE)		Item	t-value (STE)		Item	t-value (STE)
AS1	1.64* (0.21)		NA1	2.03** (0.27)		SA1	2.72** (0.17)
AS2	0.98 (0.17)		NA2	2.25** (0.23)		SA2	2.34** (0.23)
AS3	1.89** (0.12)		NA3	2.74** (0.24)		SA3	2.27** (0.17)

**Table N11: Convergent Validity Test after Removing Items for the Essay 3 Pilot Study**

Item	t-value (STE)	Item	t-value (STE)	Item	t-value (STE)
BK1	2.04** (0.21)	NA4	1.13 (0.31)	SA4	2.52** (0.17)
BK2	3.06** (0.10)	NA5	1.91** (0.26)	SA5	2.39** (0.15)
BK3	3.14** (0.10)	NA6	2.63** (0.23)	SF1	2.39** (0.09)
II1	1.55* (0.12)	PP1	3.82** (0.17)	SF2	2.55** (0.06)
II2	1.77** (0.16)	PP2	3.64** (0.15)	SF3	2.56** (0.04)
II3	2.54** (0.23)	RS1	3.42** (0.23)	SM1	2.29** (0.01)
II4	1.83** (0.17)	RS2	1.93** (0.28)	SM2	2.38** (0.01)
				SM3	2.85** (0.01)

\*significant at 0.1

\*\* significant at 0.05

STE = Standard Error

BK = Business Knowledge; TK = Technical Knowledge; NA = Network Ability; AS = Apparent Sincerity; SP = Strategic IT Initiatives Persuading Exec Team; SF = Strategic IT Initiatives Exec Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Architecture; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing

**Table N11 (cont): Convergent Validity Test after Removing Items for the Essay 3 Pilot Study**

Item	t-value (STE)	Item	t-value (STE)	Item	t-value (STE)
SP1	2.52** (0.04)	TIF3	3.00** (0.11)	TK1	2.83** (0.19)
SP2	2.61** (0.02)	TIF4	4.41** (0.06)	TK2	2.55** (0.18)
SP3	2.32** (0.04)	TIV1	3.74** (0.09)	TK6	1.89** (0.18)
TA1	1.65* (0.16)	TIV3	3.19** (0.08)	TK7	3.70** (0.16)
TA3	3.58** (0.16)	TIV4	4.12** (0.06)	TK8	3.01** (0.15)
TA4	2.46** (0.14)	TO1	3.66** (0.02)	TK9	3.17** (0.14)
TAD1	3.00** (0.04)	TO3	4.04** (0.03)	TK10	2.88** (0.15)
TAD3	4.20** (0.05)	TO4	4.49** (0.04)		
TAD4	3.67** (0.01)				
TIF1	3.46** (0.08)				

\*significant at 0.1

\*\* significant at 0.05

STE = Standard Error

BK = Business Knowledge; TK = Technical Knowledge; NA = Network Ability; AS = Apparent Sincerity; SP = Strategic IT Initiatives Persuading Exec Team; SF = Strategic IT Initiatives Exec Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Architecture; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing

Following the evaluation of convergent validity, we evaluated discriminant validity by comparing cross factor correlations against the square root of the average variance extracted of each factor (Chin and Frye 1996). If the cross factor correlation exceeds the square root of the average variance extracted, there may be a lack of discriminant validity. The correlation matrixes are illustrated Tables N12 and N13 and show there are no longer any cross factor correlations. Therefore, the results do not indicate a pervasive discriminant validity problem.

**Table N12: Discriminant Validity Analysis after Removing Items for the Essay 3 Pilot Study**

	TA 1	TA 3	TA 4	TIV 1	TIV 3	TIV 4	TIF 1	TIF 3	TIF 4	TAD 1	TAD 3	TAD 4	TO 1	TO 3	TO 4	SP 1	SP 2	SP 3	SF 1	SF 2	SF 3	SM 1	SM 2	SM 3	
TA1	<b>.68</b>																								
TA3	.40	<b>.68</b>																							
TA4	.38	.77	<b>.68</b>																						
TIV1	.32	.52	.47	<b>.68</b>																					
TIV3	.16	.65	.69	.50	<b>.68</b>																				
TIV4	.41	.54	.65	.53	.59	<b>.68</b>																			
TIF1	.49	.39	.30	.54	.17	.55	<b>.68</b>																		
TIF3	.20	.30	.21	.36	.23	.43	.74	<b>.68</b>																	
TIF4	.33	.41	.28	.54	.30	.61	.86	.85	<b>.68</b>																
TAD 1	.14	.24	.05	.35	.17	.29	.29	.08	.32	<b>.68</b>															
TAD 3	.04	.43	.22	.34	.52	.29	.20	.37	.39	.69	<b>.68</b>														
TAD 4	.11	.27	.10	.22	.25	.39	.35	.30	.52	.87	.77	<b>.68</b>													
TO1	.18	.25	.15	.38	.36	.42	.30	.27	.50	.50	.45	.61	<b>.68</b>												
TO3	.26	.49	.38	.48	.53	.53	.32	.21	.44	.51	.43	.52	.88	<b>.68</b>											
TO4	.28	.50	.42	.51	.50	.56	.33	.32	.50	.49	.55	.54	.87	.81	<b>.68</b>										
SP1	.26	.13	.22	.40	.37	.13	.09	.05	.13	.30	.24	.26	.55	.55	.45	<b>.66</b>									
SP2	.14	.01	.12	.31	.27	.10	.00	.12	.09	.15	.29	.17	.32	.24	.37	.71	<b>.66</b>								
SP3	.19	-.01	.01	.32	.27	.24	.08	.23	.31	.34	.40	.42	.62	.47	.60	.70	.81	<b>.66</b>							
SF1	.01	.32	.13	.40	.45	.26	.12	.07	.16	.38	.45	.35	.47	.50	.43	.36	.38	.37	<b>.66</b>						
SF2	.05	.30	.17	.53	.52	.32	.30	.18	.34	.45	.45	.43	.39	.50	.33	.43	.45	.43	.65	<b>.66</b>					
SF3	.12	.45	.42	.53	.59	.42	.16	.05	.20	.36	.45	.34	.39	.57	.41	.43	.45	.34	.65	.84	<b>.66</b>				
SM1	.05	.25	.04	.09	.25	.21	.05	.35	.34	.12	.42	.38	.45	.30	.45	.12	.46	.49	.38	.29	.29	<b>.66</b>			
SM2	.05	.33	.17	.14	.39	.20	.00	.30	.28	.06	.40	.31	.38	.29	.44	.18	.49	.47	.32	.33	.33	.96	<b>.66</b>		
SM3	.05	.32	.12	.21	.41	.20	.01	.28	.27	.11	.48	.34	.45	.36	.47	.29	.58	.53	.53	.40	.46	.93	.93	<b>.66</b>	

**Diagonals = square-root AVE**

Off-Diagonal = Correlations

BK = Business Knowledge; TK = Technical Knowledge; RS = Structural Power; PP = Prestige Power; SA = Social Astuteness; II = Interpersonal Influence; NA = Network Ability; AS = Apparent Sincerity; SP = Strategic IT Initiatives Persuading Executive Team; SF = Strategic IT Initiatives Executive Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Architecture; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing



**Table N12 (cont): Discriminant Validity Analysis after Removing Items for the Essay 3 Pilot Study**

	TA 1	TA 3	TA 4	TIV 1	TIV 3	TIV 4	TIF 1	TIF 3	TIF 4	TAD 1	TAD 3	TAD 4	TO 1	TO 3	TO 4	SP 1	SP 2	SP 3	SF 1	SF 2	SF 3	SM 1	SM 2	SM 3
BK1	.14	-.03	.03	.19	.06	.01	.11	.08	-.11	-.24	-.13	-.33	-.27	-.15	-.22	.12	.26	.03	.02	.24	.24	-.29	-.24	-.14
BK2	.21	.17	.12	.09	.10	.16	.11	.24	.09	-.26	-.07	-.14	.06	.09	.04	.26	.36	.17	.11	.17	.25	.28	.27	.34
BK3	.21	.03	.17	.14	.15	.27	.08	.13	.03	.04	.11	.04	.03	.04	.03	.24	.36	.27	.05	.18	.25	.10	.09	.09
TK1	.37	-.02	.17	.14	-.10	.26	.43	.36	.31	.13	.17	.19	.02	-.06	.12	.03	.22	.20	.06	.01	.01	.00	-.07	-.07
TK2	.42	.08	.14	.35	-.02	.29	.61	.46	.53	.23	.10	.24	.14	.09	.21	.16	.07	.25	.25	.05	.14	-.19	-.19	-.22
TK6	.35	.50	.41	.40	.32	.23	.10	.08	.15	.21	.46	.28	.27	.24	.41	.19	.16	.17	.30	.00	.22	.11	.11	.24
TK7	.38	.14	.10	.12	.04	.28	.20	.05	.15	.23	.23	.27	.10	.09	.12	.02	.01	.10	.07	.03	.03	-.21	-.27	-.20
TK8	.47	.09	.16	.06	-.02	.33	.23	.11	.15	-.07	-.09	.05	.15	.10	.24	.07	.18	.28	.18	.16	.16	.00	.00	-.05
TK9	.45	.25	.32	.24	.19	.27	.20	.03	.02	.07	.05	.04	-.01	.15	.07	.21	.16	.12	.07	.15	.23	-.25	-.18	-.17
TK10	.34	.13	.28	.13	.14	.23	.09	-.01	-.02	-.07	-.01	-.02	-.05	.02	.02	.16	.28	.18	.05	.16	.25	-.19	-.12	-.06
PP1	.03	-.15	-.18	-.22	-.07	-.06	-.21	-.12	-.11	.08	.08	.11	-.02	.02	-.15	.02	.12	.06	.18	.19	.30	.31	.24	.32
PP2	.05	.09	.02	.05	.15	.06	-.05	-.01	-.06	.11	.17	.02	.04	.20	.00	.03	.01	.06	.38	.29	.43	-.05	-.12	.04
RS1	.01	.16	.10	.19	.22	.20	.14	.21	.07	.24	.33	.23	.12	.20	.16	.23	.19	.21	.19	.31	.31	.00	.04	.15
RS2	-.18	-.07	.01	.11	.18	.22	.22	.46	.32	-.03	.16	.11	.01	.04	-.09	.05	.06	.07	.01	.28	.14	.10	.10	.03
AS2	.14	.14	.12	.12	.13	.26	.18	.17	.10	.10	.09	.12	.12	.07	.19	.13	.14	.22	.10	.03	.08	-.15	-.14	-.11
SA2	.13	.01	.11	.07	.02	.33	.05	.07	.06	.00	-.04	.09	.07	.02	.07	.07	.08	.07	.04	.10	.11	.15	.10	.14
AS3	.33	.17	.17	.21	.12	.14	.16	-.14	-.04	.42	.23	.33	.07	.16	.04	.25	.15	.07	.21	.28	.35	-.20	-.20	-.08
SA1	.12	.27	.20	.14	.15	.17	-.04	-.16	-.05	.13	.04	.13	-.01	.04	.06	.00	.05	.01	.27	.16	.29	.14	.14	.16
II1	-.05	-.08	-.09	-.04	-.04	.09	.06	-.22	-.03	.12	-.10	.15	.11	.13	-.10	.03	.08	.07	.13	.20	.20	-.21	-.25	-.14
NA6	.05	.13	.05	-.02	.23	.05	-.09	-.15	.00	.24	.20	.35	.39	.41	.22	.46	.16	.32	.29	.22	.30	.10	.10	.20
II2	-.09	.02	-.07	-.04	.02	.10	.01	-.07	-.01	.08	-.02	.14	.16	.19	.01	.07	.10	.04	.16	.15	.15	-.15	-.20	-.08
SA4	.06	-.05	-.15	-.11	-.01	-.11	-.19	-.23	-.13	.23	.13	.31	.04	.00	-.17	.11	.05	.02	.07	.23	.23	.18	.17	.18
NA4	-.03	.08	.19	.04	.24	.01	-.18	-.05	-.12	-.32	-.10	-.19	.03	-.10	.03	.03	.02	.02	.02	.09	.09	.12	.19	.15
NA2	-.14	.03	.02	.03	.14	-.12	-.34	-.20	-.18	-.09	.04	-.03	.13	.03	.09	.16	.21	.17	.27	.23	.35	.30	.33	.40
II3	.15	.06	-.10	-.10	-.16	.03	.02	-.20	.00	.13	-.10	.17	.18	.20	.01	.01	.09	.03	.16	.16	.22	.08	.00	.05

**Table N12 (cont): Discriminant Validity Analysis after Removing Items for the Essay 3 Pilot Study**

	TA 1	TA 3	TA 4	TIV 1	TIV 3	TIV 4	TIF 1	TIF 3	TIF 4	TAD 1	TAD 3	TAD 4	TO 1	TO 3	TO 4	SP 1	SP 2	SP 3	SF 1	SF 2	SF 3	SM 1	SM 2	SM 3
NA1	-.16	-.12	-.10	-.13	-.10	-.23	-.30	-.38	-.30	.10	-.10	.09	.04	.01	-.11	.18	.05	.12	.19	.17	.27	.04	.04	.11
AS1	.23	.03	-.03	-.02	-.02	.05	-.05	-.18	-.07	.08	-.10	.06	.34	.36	.27	.34	.19	.35	.17	.22	.22	.00	.00	.07
SA5	.10	.18	.09	.16	.18	.21	.01	-.05	.05	.17	.24	.22	-.01	.08	-.05	.00	.01	.01	.23	.46	.51	-.12	-.11	-.04
II4	-.01	.01	-.12	-.17	.01	-.05	-.04	-.20	-.09	.03	-.03	.13	-.07	-.04	-.27	.19	.23	.25	.13	.23	.23	.00	.00	.02
SA3	-.05	.05	-.09	-.12	.09	-.06	-.16	-.21	-.16	.20	.22	.26	-.01	-.01	-.13	.07	.14	.14	.27	.35	.35	.09	.09	.12
NA5	-.09	-.10	.01	-.04	.05	-.06	-.14	-.08	-.10	.07	.07	.17	.07	.03	-.09	.33	.23	.04	.20	.24	.40	.04	.04	.16
NA3	.15	.09	.07	-.02	.15	.19	.08	-.02	.20	.11	.05	.33	.31	.26	.10	.24	.10	.19	.17	.25	.31	.19	.18	.22

Diagonals = square-root AVE

Off-Diagonal = Correlations

BK = Business Knowledge; TK = Technical Knowledge; RS = Structural Power; PP = Prestige Power; SA = Social Astuteness; II = Interpersonal Influence; NA = Network Ability; AS = Apparent Sincerity; SP = Strategic IT Initiatives Persuading Executive Team; SF = Strategic IT Initiatives Executive Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Architecture; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing

**Table N12 (cont): Discriminant Validity Analysis after Removing Items for the Essay 3 Pilot Study**

	BK1	BK2	BK3	TK1	TK2	TK6	TK7	TK8	TK9	TK10	PP1	PP2	RS1	RS2
BK1	<b>.84</b>													
BK2	.54	<b>.84</b>												
BK3	.50	.69	<b>.84</b>											
TK1	.27	.12	.27	<b>.75</b>										
TK2	.23	.10	.17	.62	<b>.75</b>									
TK6	.10	.08	.04	.30	.15	<b>.75</b>								
TK7	.30	.07	.12	.55	.33	.61	<b>.75</b>							
TK8	.26	.29	.28	.57	.54	.36	.62	<b>.75</b>						
TK9	.66	.40	.52	.44	.49	.41	.55	.67	<b>.75</b>					
TK10	.61	.34	.31	.49	.36	.35	.60	.63	.77	<b>.75</b>				
PP1	.09	.27	.27	-.02	-.24	-.20	-.17	-.31	-.06	-.02	<b>.92</b>			
PP2	.33	.29	.21	-.04	-.20	.01	.05	-.26	.14	.14	.69	<b>.92</b>		
RS1	.40	.23	.34	.10	.27	.10	.07	.15	.41	.29	.03	.04	<b>.83</b>	
RS2	.05	.14	.27	.11	.14	-.34	-.18	-.10	-.07	-.12	.20	.10	.41	<b>.83</b>
AS2	.40	.19	.28	.27	.35	.35	.58	.53	.51	.47	-.37	-.19	.46	-.04
SA2	.08	.23	.17	.08	-.03	.16	.09	.15	.07	.07	.26	.08	.14	.21

**Table N12 (cont): Discriminant Validity Analysis after Removing Items for the Essay 3 Pilot Study**

	BK1	BK2	BK3	TK1	TK2	TK6	TK7	TK8	TK9	TK10	PP1	PP2	RS1	RS2
AS3	.40	.07	.21	.36	.22	.43	.57	.25	.61	.55	.05	.10	.36	-.20
SA1	.11	.14	.05	.00	-.12	.26	.22	.03	.14	.21	.28	.22	-.02	-.08
II1	.24	.19	.11	.20	.05	.11	.48	.23	.32	.49	.11	.12	.04	-.08
NA6	.00	.21	.11	-.18	-.06	.20	.10	.02	.14	.07	.30	.19	.17	.06
II2	.36	.34	.22	.16	.20	.19	.45	.32	.43	.45	.09	.20	.27	.06
SA4	.12	.18	.22	-.03	-.11	.11	.16	-.12	.21	.18	.53	.21	.04	-.01
NA4	.17	.22	.22	.10	.06	.31	.11	.21	.20	.20	-.10	-.20	.05	.06
NA2	.08	.25	.14	-.18	-.25	.09	-.17	-.20	-.10	.09	.43	.22	.08	.09
II3	.07	.36	.18	-.01	-.08	.02	.23	.07	.11	.12	.46	.32	-.07	-.03
NA1	-.07	.13	-.11	-.29	-.32	-.02	-.10	-.29	-.13	.01	.35	.29	-.10	-.15
AS1	.08	.07	-.13	.02	.07	.05	.28	.33	.17	.34	-.12	-.11	.27	-.12
SA5	.40	.16	.18	.13	.02	.27	.44	.09	.41	.46	.28	.41	.19	.16
II4	.16	.12	.08	-.03	-.15	.02	.19	.02	.23	.29	.41	.33	-.04	.08
SA3	.07	.08	.05	-.07	-.19	.03	.07	-.21	.01	.07	.46	.33	.17	.25
NA5	.13	.19	.06	-.14	-.22	.09	-.01	-.18	.07	.21	.31	.35	.04	-.01
NA3	-.01	.22	.16	-.12	-.05	.16	.20	.11	.17	.17	.31	.10	.04	.10

Diagonals = square-root AVE

Off-Diagonal = Correlations

BK = Business Knowledge; TK = Technical Knowledge; RS = Structural Power; PP = Prestige Power; SA = Social Astuteness; II = Interpersonal Influence; NA = Network Ability; AS = Apparent Sincerity; SP = Strategic IT Initiatives Persuading Executive Team; SF = Strategic IT Initiatives Executive Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Architecture; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing

**Table N12 (cont): Discriminant Validity Analysis after Removing Items for the Essay 3 Pilot Study**

	AS2	SA2	AS3	SA1	II1	NA6	II2	SA4
AS2	<b>.64</b>							
SA2	.15	<b>.64</b>						
AS3	.51	.15	<b>.64</b>					
SA1	.29	.63	.47	<b>.64</b>				
II1	.32	.17	.59	.40	<b>.64</b>			
NA6	.20	.49	.37	.58	.40	<b>.64</b>		
II2	.49	.28	.48	.47	.79	.57	<b>.64</b>	
SA4	.07	.26	.54	.48	.42	.47	.31	<b>.64</b>
NA4	.42	.19	.20	.35	.22	.23	.35	.35
NA2	.02	.36	.14	.61	.20	.47	.30	.49
II3	.13	.40	.38	.67	.58	.65	.60	.56

**Table N12 (cont): Discriminant Validity Analysis after Removing Items for the Essay 3 Pilot Study**

	AS2	SA2	AS3	SA1	II1	NA6	II2	SA4	
NA1		-.14	.35	.25	.50	.27	.44	.23	.52
AS1	.39		.07	.39	.25	.34	.40	.45	.05
SA5	.17	.24		.44	.38	.34	.30	.40	.49
II4	-.06	.23	.28		.44	.60	.33	.46	.54
SA3	-.05	.34	.30	.50		.29	.41	.30	.68
NA5	-.09	.42	.27	.34	.19		.37	.16	.48
NA3	.20	.52	.32	.57	.45	.75		.44	.54

**Diagonals = square-root AVE**

Off-Diagonal = Correlations

BK = Business Knowledge; TK = Technical Knowledge; RS = Structural Power; PP = Prestige Power; SA = Social Astuteness; II = Interpersonal Influence; NA = Network Ability; AS = Apparent Sincerity; SP = Strategic IT Initiatives Persuading Executive Team; SF = Strategic IT Initiatives Executive Team Following Advice; SM = Strategic IT Initiatives CIO Making Decisions; TA = Technical IT Initiatives IT Architecture; TIV = Technical IT Initiatives IT Investments; TIF = Technical IT Initiatives IT Infrastructure; TAD = Technical IT Initiatives Application Development; TO = Technical IT Initiatives Outsourcing

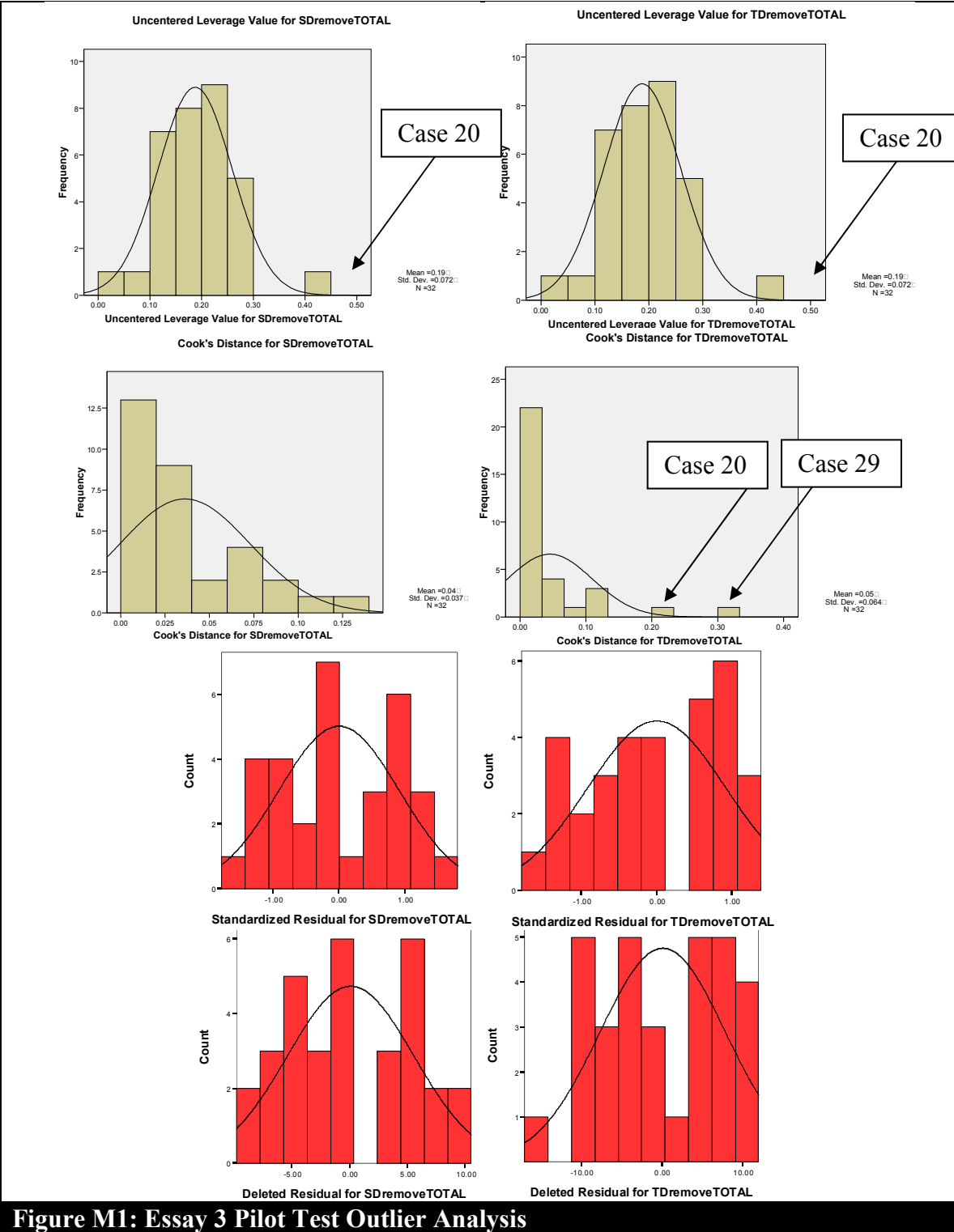
**Table N12 (cont): Discriminant Validity Analysis after Removing Items for the Essay 3 Pilot Study**

	NA4	NA2	II3	NA1	AS1	SA5	II4	SA3	NA5	NA3
AS2										
SA2										
AS3										
SA1										
II1										
NA6										
II2										
SA4										
NA4	<b>.64</b>									
NA2	.56	<b>.64</b>								
II3	.14	.47	<b>.64</b>							
NA1	.08	.54	.54	<b>.64</b>						
AS1	.08	.24	.39	.21	<b>.64</b>					
SA5	.12	.36	.37	.32	.21	<b>.64</b>				
II4	.19	.40	.47	.35	-.05	.52	<b>.64</b>			
SA3	.27	.61	.48	.54	.09	.63	.67	<b>.64</b>		
NA5	.01	.45	.26	.78	.06	.50	.40	.51	<b>.64</b>	
NA3	.22	.48	.66	.52	.27	.44	.55	.41	.53	<b>.64</b>

<b>Table N13: Discriminant Validity – Latent Variable Matrix for the Essay 3 Pilot Study</b>							
	BK	TK	PS	PP	S	SP	T
BK	<b>0.84</b>						
TK	0.34	<b>0.75</b>					
PS	0.25	0.23	<b>0.64</b>				
PP	0.32	-0.12	0.36	<b>0.92</b>			
S	0.31	0.10	0.38	0.30	<b>0.66</b>		
SP	0.36	0.16	0.17	0.09	0.30	<b>0.83</b>	
T	0.09	0.43	0.14	0.01	0.56	0.26	<b>0.68</b>
Diagonals = square root AVE Off-diagonals = correlations BK = Business Knowledge; TK = Technical Knowledge; PS = Political Skill; PP = Prestige Power; S = Strategic IT Initiatives; SP = Structural Power; T = Technical IT Initiatives							

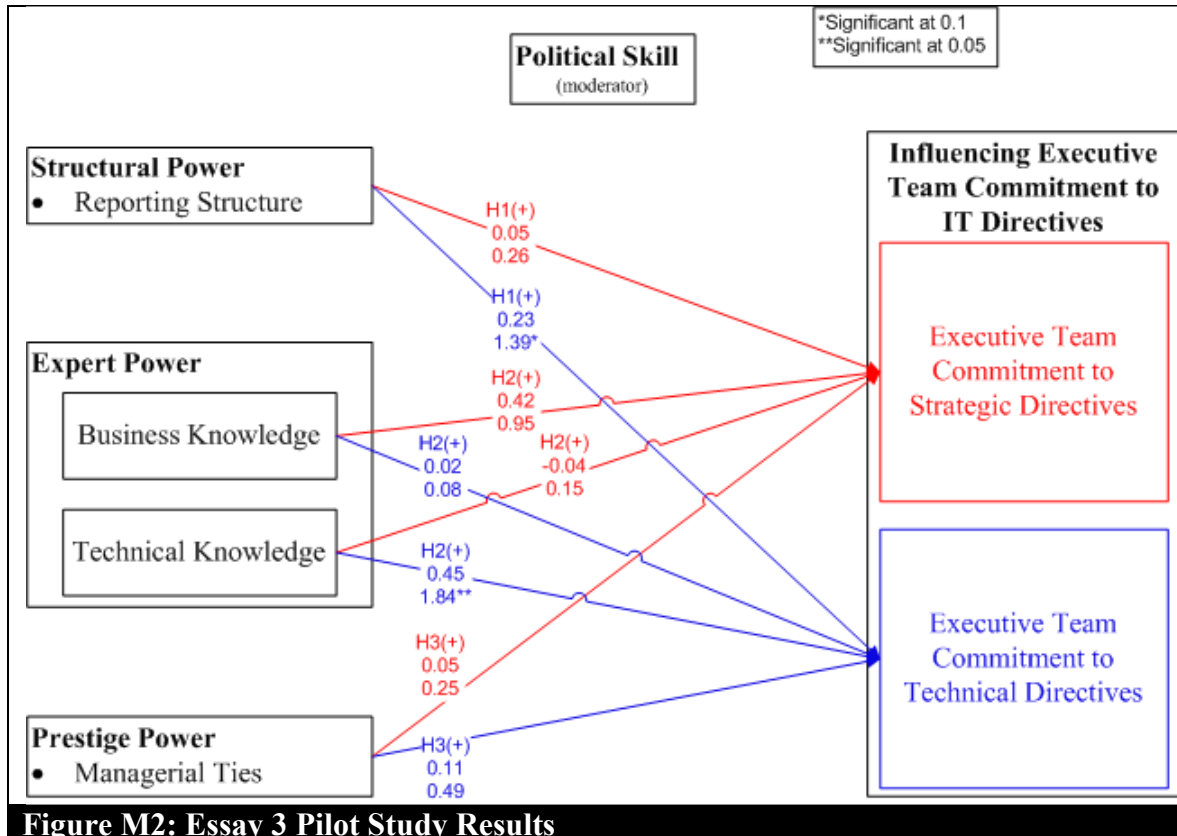
### **Preliminary Model Assessment**

We used SPSS 15.0 for Windows Grad Pack (LEADTOOLS 2006) to run a preliminary assessment of our model. First, we checked for outliers as illustrated in Figure M1 to ensure none of the cases would distort our results. Specifically, we first analyzed the standardized and deleted residuals to ensure all the cases were within  $\pm 3$  standard deviations (Daniel and Terrell 1995). As illustrated in Figure M1, cases 20 and 29 were potential outliers. Next, we analyzed the Leverage and Cook's values to assess the distance for each case from all other cases (Tabachnick and Fidell 2007). As illustrated in Figure M1, we found additional evidence that case 20 was an outlier. Since we determined case 20 could potentially distort our results, we deleted it from further analysis.



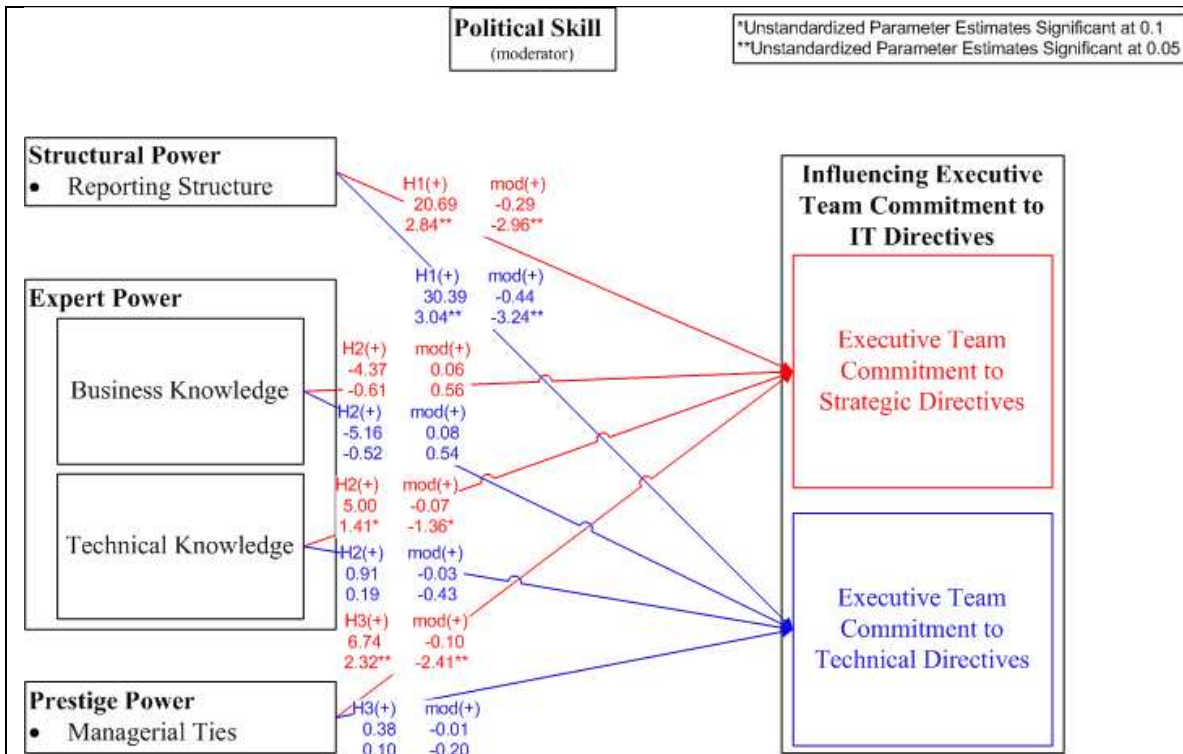
**Figure M1: Essay 3 Pilot Test Outlier Analysis**

Then, we tested for main effects (H1 through H4 shown in Figure 1). We used SmartPLS 2.0 (Ringle et al. 2005) for the analysis<sup>57</sup>. Results are illustrated in Figure M2.



Even though many of the relationships are insignificant, we also tested the interaction effects. We used Multivariate General Linear Modeling in SPSS 15.0 for Windows Grad Pack (LEADTOOLS 2006) for this analysis. The results are illustrated in Figure M3.

<sup>57</sup> The results were also confirmed with a Multivariate General Linear Model analysis and Regression analysis in SPSS 15.0 Grad Pack.



**Figure M3: Essay 3 Pilot Study Results – Moderator Analysis**

These results indicate H1 and H3 are supported for the main analysis and political skill moderates the relationships between technical knowledge/structural power/prestige power and executive team commitment to strategic IT initiatives and between structural power and executive team commitment to technical IT initiatives. The fact that most of the relationships are insignificant may be due to the small sample size (n=34) and the associated lack of statistical power. Therefore, results suggest we may expect to find significant effects. Nevertheless, as a precautionary measure, we decided to add some additional items to our survey to ensure we were capturing the constructs such that significant relationships would be detected. This process is described in Survey Administration section.



## APPENDIX O: Item Stems Included in the Fully Study

Construct	Stem
Influence over Executive Team Commitment to Technical IT Initiatives (TIF - IT Infrastructure)	Think about how you interact with executive team members in your firm when a decision needs to be made about the <i>IT Infrastructure (decisions regarding shared IT services such as databases, LAN, WAN, PCs, Intranet, and standard applications)</i> .
Influence over Executive Team Commitment to Technical IT Initiatives (TIV - IT Investments)	Think about how you interact with executive team members in your firm when a decision needs to be made about <i>IT Investments (decisions about the amount, type, and priority of IT investments such as purchasing new hardware, software, or services, or hiring new IT employees)</i> .
Influence over Executive Team Commitment to Technical IT Initiatives (TAD - Application Development)	Think about how you interact with executive team members in your firm when a decision needs to be made about <i>Application Development (decisions concerning management of computer software development and implementation projects)</i> .
Influence over Executive Team Commitment to Technical IT Initiatives (TA - IT Architecture)	Think about how you interact with executive team members in your firm when a decision needs to be made about the <i>IT Architecture (decisions about how technical requirements should be addressed and how project risks should be mitigated to support business needs)</i> .
Influence over Executive Team Commitment to Technical IT Initiatives (TO - IT Outsourcing)	Think about how you interact with executive team members in your firm when a decision needs to be made about <i>IT Outsourcing (decisions concerning policy and management of any external IT providers)</i> .
Influence over Executive Team Commitment to Strategic IT Initiatives (SP - Persuading)	Think about how you interact with executive team members in your firm when a decision needs to be made about using IT to impact the firm's strategic direction. I typically persuade our executive team...
Influence over Executive Team Commitment to Strategic IT Initiatives (SF - Following Advice)	Think about how you interact with executive team members in your firm when a decision needs to be made about using IT to impact the firm's strategic direction. Our executive team follows my advice on...
Influence over Executive Team Commitment to Strategic IT Initiatives (SM - Making Decisions)	Think about how you interact with executive team members in your firm when a decision needs to be made about using IT to impact the firm's strategic direction. I make decisions for our executive team in regard to...
Influence over Executive Team Commitment to Strategic IT Initiatives (SA - Impact of Advice)	Think about how you interact with executive team members in your firm when a decision needs to be made about using IT to impact the firm's strategic direction. My advice impacts executive team decisions on...

<b>Construct</b>	<b>Stem</b>
Expert Power (BK - Business Knowledge)	Please indicate how well informed you are about each of the following:
Expert Power (TK - Technical Knowledge)	Thinking about information systems as they relate to your firm, please indicate how informed you feel about the following:
Prestige Power (PPE - External Connections)	Thinking about how you utilize professional relationships and connections <i>external to your firm</i> , please indicate the frequency with which you contact executive teams...
Prestige Power (PPI - Internal Connections)	Thinking about how you utilize professional relationships and connections with <i>executive team members within your firm</i> , please indicate the frequency with which you are involved in...
Prestige Power (PPRE - External Reputation)	Thinking about your reputation among <i>colleagues outside your firm</i> with whom you interact regularly, please indicate the extent to which you agree or disagree with the following. My colleagues...
Prestige Power (PPRI - Internal Reputation)	Thinking about your reputation among <i>the executive team</i> , please indicate the extent to which you agree or disagree with the following. The executive team...
Structural Power (SPFI - Formal Interaction)	Thinking about the formal interaction you have with the executive team members in your firm, to what extent do you agree with the following statements:
Structural Power (SPRI - Role Importance)	Thinking about the importance of your role to your firm, to what extent do you agree with the following statements:
Political Skill (PS)	Reflecting on your people and communication skills at work, please evaluate the following statements.

### APPENDIX P: Essay 3 Confirmatory Factor Analysis

	ACMV	BA	CABS2ITO	CAITS2BSO	IA	ITA	OA	PERF
ACMV1	<b>0.64</b>	0.08	0.16	0.21	0.14	0.20	0.15	0.06
ACMV2	<b>0.79</b>	0.20	0.33	0.32	0.24	0.25	0.32	0.21
ACMV3	<b>0.86</b>	0.31	0.21	0.14	0.08	0.04	0.17	0.36
ACMV4	<b>0.61</b>	0.11	0.10	0.16	0.16	0.15	0.11	0.10
BA1	0.32	<b>0.89</b>	0.52	0.50	0.37	0.48	0.50	0.52
BA2	0.36	<b>0.73</b>	0.39	0.39	0.23	0.35	0.33	0.40
BA3	0.15	<b>0.82</b>	0.45	0.42	0.34	0.42	0.44	0.46
BA4	0.26	<b>0.80</b>	0.44	0.41	0.31	0.42	0.40	0.32
BA5	0.14	<b>0.79</b>	0.41	0.38	0.24	0.38	0.39	0.35
BA6	0.20	<b>0.85</b>	0.46	0.43	0.34	0.40	0.48	0.49
CABS2ITO1	0.25	0.46	<b>0.82</b>	0.70	0.56	0.60	0.66	0.26
CABS2ITO2	0.19	0.40	<b>0.80</b>	0.63	0.44	0.56	0.64	0.27

	ACMV	BA	CABS2ITO	CAITS2BSO	IA	ITA	OA	PERF
CABS2ITO3	0.25	0.52	<b>0.86</b>	0.68	0.52	0.65	0.75	0.40
CABS2ITO4	0.26	0.46	<b>0.81</b>	0.65	0.50	0.51	0.67	0.33
CABS2ITO5	0.22	0.44	<b>0.85</b>	0.68	0.48	0.61	0.78	0.28
CABS2ITO6	0.25	0.43	<b>0.85</b>	0.70	0.48	0.57	0.75	0.34
CAITS2BSO1	0.23	0.37	0.66	<b>0.83</b>	0.55	0.64	0.73	0.26
CAITS2BSO2	0.16	0.38	0.61	<b>0.79</b>	0.46	0.63	0.66	0.15
CAITS2BSO3	0.28	0.48	0.67	<b>0.83</b>	0.60	0.60	0.70	0.34
CAITS2BSO4	0.17	0.39	0.67	<b>0.80</b>	0.53	0.63	0.70	0.27
CAITS2BSO5	0.14	0.42	0.71	<b>0.83</b>	0.49	0.70	0.73	0.18
CAITS2BSO6	0.21	0.50	0.68	<b>0.87</b>	0.52	0.60	0.71	0.34
IA1	0.17	0.34	0.52	0.54	<b>0.82</b>	0.44	0.51	0.19
IA2	0.22	0.44	0.60	0.58	<b>0.85</b>	0.51	0.59	0.32
IA3	0.08	0.16	0.38	0.42	<b>0.72</b>	0.35	0.43	0.14
IA4	0.17	0.25	0.43	0.47	<b>0.84</b>	0.39	0.49	0.25
IA5	0.10	0.27	0.41	0.49	<b>0.73</b>	0.37	0.41	0.21
IA6	0.09	0.19	0.43	0.49	<b>0.72</b>	0.36	0.44	0.08
IA7	0.11	0.23	0.37	0.49	<b>0.77</b>	0.39	0.46	0.19
IA8	0.11	0.35	0.55	0.56	<b>0.82</b>	0.49	0.57	0.23
ITA1	0.08	0.42	0.51	0.60	0.40	<b>0.84</b>	0.60	0.18
ITA2	0.15	0.44	0.64	0.65	0.48	<b>0.85</b>	0.66	0.21
ITA3	0.12	0.44	0.56	0.61	0.41	<b>0.82</b>	0.58	0.19
ITA4	0.15	0.46	0.59	0.62	0.50	<b>0.83</b>	0.66	0.20
ITA5	0.19	0.40	0.64	0.66	0.47	<b>0.86</b>	0.72	0.14
ITA6	0.13	0.33	0.58	0.66	0.43	<b>0.81</b>	0.64	0.15
OA1	0.20	0.41	0.67	0.72	0.50	0.66	<b>0.81</b>	0.21
OA2	0.20	0.40	0.59	0.64	0.42	0.61	<b>0.73</b>	0.18
OA3	0.21	0.50	0.70	0.68	0.55	0.58	<b>0.82</b>	0.33
OA4	0.27	0.34	0.66	0.69	0.51	0.62	<b>0.78</b>	0.20
OA5	0.25	0.40	0.76	0.69	0.47	0.60	<b>0.84</b>	0.29
OA6	0.14	0.48	0.75	0.74	0.60	0.71	<b>0.87</b>	0.25
PERF1	0.24	0.51	0.38	0.32	0.24	0.23	0.33	<b>0.87</b>
PERF2	0.28	0.40	0.29	0.28	0.18	0.19	0.26	<b>0.85</b>
PERF3	0.27	0.39	0.31	0.26	0.21	0.25	0.23	<b>0.82</b>
PERF4	0.25	0.43	0.27	0.22	0.20	0.05	0.19	<b>0.80</b>
PERF5	0.14	0.38	0.26	0.19	0.20	0.14	0.22	<b>0.70</b>
PERF6	0.32	0.47	0.33	0.28	0.22	0.12	0.29	<b>0.87</b>
PERF7	0.32	0.44	0.32	0.29	0.29	0.22	0.24	<b>0.80</b>
PERF8	0.27	0.38	0.30	0.31	0.27	0.22	0.26	<b>0.73</b>

## APPENDIX Q: Item-Level Correlations

Table Q1: Discriminant Validity Analysis for the Essay 3 Full Study																											
Constr uct	Commitment to IT Infrastructure Technical IT Initiatives			Commitment to IT Investments Technical IT Initiatives			Commitment to Application Development Technical IT Initiatives			Commitment to IT Architecture Technical IT Initiatives			Commitment to IT Outsourcing Technical IT Initiatives			CIO Persuading Executive Team			Executive Team Following Advice			CIO Making Decisions			Advice Impacting Executive Team		
	TIF1	TIF 2	TIF 3	TIV 1	TIV 2	TIV 3	TA D1	TA D2	TA D3	TA 1	TA 2	TA 3	TO1	TO2	TO3	SP1	SP 2	SP 3	SF 1	SF 2	SF 3	SM 1	SM 2	SM 3	SA 1	SA 2	SA 3
TIF1	<b>.93</b>																										
TIF2	.74	<b>.93</b>																									
TIF3	.88	.74	<b>.93</b>																								
TIV1	.33	.28	.26	<b>.90</b>																							
TIV2	.25	.31	.20	.56	<b>.90</b>																						
TIV3	.33	.32	.29	.57	.63	<b>.90</b>																					
TAD1	.14	.32	.12	.42	.54	.52	<b>.93</b>																				
TAD2	.23	.35	.22	.49	.63	.68	.79	<b>.93</b>																			
TAD3	.31	.28	.26	.53	.58	.67	.65	.77	<b>.93</b>																		
TA1	.42	.45	.35	.59	.65	.75	.62	.72	.66	<b>.92</b>																	
TA2	.31	.30	.19	.55	.67	.67	.57	.65	.60	.75	<b>.92</b>																
TA3	.22	.37	.23	.46	.58	.60	.57	.59	.50	.75	.65	<b>.92</b>															
TO1	.24	.30	.16	.39	.53	.61	.62	.68	.53	.59	.58	.55	<b>.91</b>														
TO2	.24	.29	.18	.42	.58	.55	.56	.59	.47	.56	.61	.46	.67	<b>.91</b>													
TO3	.25	.22	.17	.45	.51	.57	.56	.61	.55	.54	.57	.50	.74	.59	<b>.91</b>												
SP1	.30	.28	.20	.43	.51	.42	.49	.52	.48	.46	.47	.43	.50	.50	.55	<b>.90</b>											
SP2	.28	.25	.21	.43	.44	.37	.42	.42	.46	.43	.41	.39	.28	.35	.43	.59	<b>.90</b>										
SP3	.29	.27	.21	.29	.38	.32	.40	.42	.44	.42	.41	.42	.36	.34	.42	.52	.58	<b>.90</b>									
SF1	.22	.25	.08	.34	.50	.35	.39	.37	.31	.41	.50	.39	.42	.44	.39	.47	.41	.44	<b>.87</b>								
SF2	.21	.25	.21	.35	.45	.32	.37	.37	.38	.31	.36	.27	.27	.41	.35	.49	.49	.44	.52	<b>.87</b>							
SF3	.29	.33	.30	.38	.56	.44	.45	.53	.49	.38	.48	.38	.50	.57	.52	.56	.52	.53	.54	.69	<b>.87</b>						
SM1	.30	.32	.26	.46	.53	.46	.50	.52	.51	.52	.47	.45	.46	.47	.48	.57	.49	.45	.48	.54	.56	<b>.91</b>					
SM2	.08	.13	.09	.31	.34	.30	.39	.34	.32	.33	.33	.35	.37	.36	.47	.48	.43	.41	.39	.49	.47	.64	<b>.91</b>				
SM3	.26	.22	.19	.40	.45	.48	.39	.47	.48	.49	.45	.40	.53	.44	.53	.54	.47	.52	.49	.51	.55	.69	.69	<b>.91</b>			
SA1	.29	.23	.25	.32	.40	.48	.39	.47	.45	.48	.47	.44	.44	.42	.54	.46	.47	.48	.34	.40	.50	.42	.43	.53	<b>.91</b>		
SA2	.39	.34	.35	.35	.46	.50	.49	.61	.54	.49	.51	.35	.48	.55	.57	.53	.54	.54	.38	.51	.64	.47	.44	.58	.70	<b>.91</b>	
SA3	.20	.19	.21	.32	.41	.47	.38	.44	.42	.46	.44	.41	.39	.47	.50	.44	.49	.46	.31	.47	.55	.43	.47	.53	.66	.70	<b>.91</b>

Diagonals = square-root AVE; Off-Diagonal = Correlations

**Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study**

Constru cts		Commitment to IT Infrastructure Technical IT Initiatives			Commitment to IT Investments Technical IT Initiatives			Commitment to Application Development Technical IT Initiatives			Commitment to IT Architecture Technical IT Initiatives		
		TIF1	TIF2	TIF3	TIV1	TIV2	TIV3	TAD	TAD2	TAD3	TA1	TA2	TA3
Bus Know	BK1	.26	.10	.22	.36	.33	.46	.37	.51	.57	.49	.44	.33
	BK2	.19	.14	.16	.37	.31	.44	.46	.50	.54	.51	.41	.35
	BK3	.16	.13	.19	.19	.22	.33	.31	.35	.38	.40	.30	.35
	BK4	-.01	.04	.03	.03	.08	.14	.31	.29	.26	.23	.13	.20
	BK5	.15	.15	.16	.19	.26	.28	.39	.48	.45	.38	.32	.31
	BK6	.19	.12	.14	.28	.32	.41	.34	.40	.42	.41	.41	.29
	BK7	.14	.08	.20	.26	.18	.23	.31	.29	.40	.26	.24	.29
	BK8	.13	.14	.17	.20	.17	.26	.29	.32	.32	.34	.20	.32
	BK9	.10	.05	.08	.18	.17	.20	.29	.27	.34	.27	.25	.28
	BK10	.18	.08	.18	.23	.21	.27	.26	.31	.31	.30	.28	.30
Tech Know	TK1	.14	.03	.13	.23	.33	.38	.21	.32	.42	.41	.43	.42
	TK2	.19	.10	.19	.27	.36	.42	.30	.40	.45	.49	.49	.51
	TK3	.09	.00	.08	.25	.27	.36	.31	.35	.40	.36	.39	.37
	TK4	-.03	-.01	.07	.16	.25	.28	.18	.22	.27	.26	.26	.29
	TK5	.01	.07	.08	.07	.13	.18	.22	.25	.23	.15	.13	.16
	TK6	.10	.15	.23	.12	.20	.31	.37	.41	.38	.28	.26	.34
	TK7	.08	.10	.13	.10	.19	.22	.36	.33	.26	.23	.27	.33
	TK8	.10	.02	.15	.20	.23	.29	.20	.25	.28	.24	.24	.32
	TK9	.23	.11	.28	.32	.31	.47	.19	.35	.39	.41	.38	.38
	TK10	.07	.05	.14	.24	.23	.29	.23	.26	.30	.36	.26	.43
External Connects.	PPE1	-.14	-.06	-.16	.04	.09	.07	.22	.21	.16	.01	.08	.00
	PPE2	-.13	-.02	-.16	.06	.09	.14	.23	.24	.13	.11	.09	.06
	PPE3	-.15	-.02	-.17	-.02	.01	-.01	.20	.13	.00	-.03	.02	-.10
	PPE4	-.15	-.04	-.15	-.03	-.01	-.04	.16	.11	.00	-.05	.00	-.02
Internal Connects.	PPI1	-.01	.00	-.06	-.05	.02	.04	.06	.09	.07	.09	.08	.09
	PPI2	.04	-.03	-.02	-.03	.02	.06	-.06	.03	.04	.07	.08	.09
	PPI3	-.07	-.02	-.11	.00	.05	.05	.13	.14	.08	.03	.07	.01
External Reputatio n (Prestige Power)	PPR E1	.24	.16	.25	.30	.34	.41	.35	.42	.47	.37	.32	.33
	PPR E2	.29	.20	.25	.32	.36	.40	.39	.44	.44	.41	.40	.36
	PPR E3	.27	.20	.24	.37	.43	.49	.39	.45	.56	.46	.38	.37
	PPR E4	.13	.06	.05	.22	.26	.27	.29	.28	.34	.22	.23	.18
	PPR E5	.02	.08	.03	.19	.24	.22	.33	.30	.27	.18	.17	.13
	PPR E6	.12	.18	.12	.19	.26	.26	.41	.38	.31	.31	.23	.33

Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study													
Constructs		Commitment to IT Infrastructure Technical IT Initiatives			Commitment to IT Investments Technical IT Initiatives			Commitment to Application Development Technical IT Initiatives			Commitment to IT Architecture Technical IT Initiatives		
	PPR E7	.15	.17	.14	.24	.30	.26	.35	.34	.33	.29	.24	.38
Internal Reputation (Prestige Power)	PPR I1	.23	.13	.18	.41	.46	.40	.33	.40	.45	.41	.42	.37
	PPR I2	.27	.18	.23	.39	.46	.38	.33	.44	.49	.36	.34	.34
	PPR I3	.27	.18	.27	.33	.33	.34	.18	.32	.38	.32	.23	.25
	PPR I4	.18	.15	.11	.26	.39	.23	.28	.33	.33	.26	.33	.24
	PPR I5	.17	.19	.20	.27	.36	.25	.32	.35	.33	.26	.27	.23
	PPR I6	.10	.16	.14	.35	.47	.35	.38	.40	.41	.36	.39	.44
	PPR I7	.16	.14	.16	.30	.41	.38	.31	.40	.43	.34	.37	.35

Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study																
Constructs		Commitment to IT Outsourcing Technical IT Initiatives			CIO Persuading Executive Team			Executive Team Following Advice			CIO Making Decisions			Advice Impacting Executive Team		
		TO1	TO2	TO3	SP1	SP2	SP3	SF1	SF2	SF3	SM1	SM2	SM3	SA1	SA2	SA3
Bus Know	BK1	.38	.34	.45	.37	.38	.42	.17	.27	.38	.43	.35	.48	.43	.50	.42
	BK2	.39	.35	.40	.38	.37	.38	.23	.36	.35	.46	.39	.47	.34	.38	.36
	BK3	.32	.27	.28	.26	.24	.33	.21	.30	.33	.31	.25	.35	.32	.31	.35
	BK4	.26	.21	.18	.23	.16	.27	.13	.25	.24	.25	.17	.23	.19	.20	.22
	BK5	.37	.31	.33	.33	.27	.40	.24	.29	.39	.36	.27	.38	.26	.37	.26
	BK6	.44	.41	.39	.32	.25	.32	.29	.34	.42	.31	.23	.36	.31	.33	.33
	BK7	.21	.17	.31	.23	.28	.28	.05	.26	.35	.22	.21	.15	.19	.17	.22
	BK8	.26	.19	.23	.25	.31	.35	.10	.25	.32	.22	.11	.20	.23	.22	.27
	BK9	.27	.19	.28	.28	.22	.29	.14	.20	.24	.30	.24	.24	.19	.12	.15
	BK10	.33	.26	.36	.38	.34	.33	.17	.25	.33	.34	.28	.29	.34	.29	.32
Tech Know	TK1	.33	.30	.32	.30	.29	.40	.22	.19	.33	.35	.26	.37	.35	.30	.32
	TK2	.36	.31	.39	.32	.34	.44	.24	.18	.34	.35	.31	.40	.44	.40	.38
	TK3	.37	.29	.36	.28	.24	.28	.15	.17	.29	.29	.23	.26	.31	.24	.25
	TK4	.23	.29	.19	.20	.12	.17	.11	.26	.32	.33	.27	.23	.19	.11	.25
	TK5	.26	.19	.20	.27	.22	.29	.19	.35	.36	.31	.36	.36	.25	.26	.27
	TK6	.35	.28	.33	.28	.25	.30	.10	.27	.39	.30	.33	.26	.39	.37	.40
	TK7	.34	.25	.33	.22	.16	.19	.14	.13	.28	.22	.20	.12	.30	.23	.24
	TK8	.29	.20	.31	.26	.20	.18	.11	.16	.29	.36	.32	.28	.32	.19	.27
	TK9	.40	.31	.38	.32	.26	.27	.13	.24	.36	.39	.35	.42	.40	.35	.39
	TK10	.26	.21	.27	.27	.30	.32	.10	.18	.27	.32	.27	.29	.27	.19	.27
External Connects.	PPE1	.14	.10	.11	.21	.25	.24	.17	.26	.24	.15	.27	.23	.14	.20	.19
	PPE2	.25	.16	.14	.19	.19	.21	.14	.19	.17	.16	.27	.30	.12	.21	.19
	PPE3	.04	.09	-.02	.12	.15	.12	.23	.27	.15	.07	.20	.13	.01	.13	.09

**Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study**

Constructs		Commitment to IT Outsourcing Technical IT Initiatives			CIO Persuading Executive Team			Executive Team Following Advice			CIO Making Decisions			Advice Impacting Executive Team			
		TO1	TO2	TO3	SP1	SP2	SP3	SF1	SF2	SF3	SM1	SM2	SM3	SA1	SA2	SA3	
	PPE4	.10		.07	.07	.19	.20	.20	.13	.19	.17	.07	.23	.13	.06	.12	.09
Internal Connects.	PPI1	.02	.02	-.07	.06	.07	.12	-.11	-.11	-.06	.02	.01	.05	.01	.02	.07	
	PPI2	.04	-.01	-.05	.07	.05	.10	-.10	-.13	-.06	.01	.00	.09	.00	.01	.05	
	PPI3	.14	.12	.07	.19	.16	.19	.12	.15	.15	.11	.20	.20	.07	.14	.12	
External Reputation (Prestige Power)	PPRE1	.42	.35	.48	.41	.40	.37	.23	.27	.41	.40	.42	.42	.41	.42	.45	
	PPRE2	.45	.38	.50	.46	.43	.40	.27	.24	.37	.39	.41	.39	.41	.43	.42	
	PPRE3	.41	.34	.44	.39	.44	.44	.39	.33	.42	.38	.34	.44	.37	.38	.39	
	PPRE4	.36	.24	.33	.26	.32	.33	.34	.22	.33	.22	.15	.24	.18	.17	.18	
	PPRE5	.25	.28	.26	.24	.37	.31	.24	.31	.39	.21	.17	.17	.22	.27	.33	
	PPRE6	.39	.29	.36	.36	.39	.38	.26	.23	.34	.33	.27	.25	.30	.26	.33	
	PPRE7	.31	.18	.36	.40	.40	.38	.33	.26	.34	.34	.33	.28	.30	.22	.28	
Internal Reputation (Prestige Power)	PPRI1	.32	.37	.40	.52	.49	.37	.35	.36	.45	.41	.28	.30	.33	.33	.35	
	PPRI2	.36	.36	.40	.57	.51	.41	.35	.37	.50	.46	.26	.35	.31	.34	.33	
	PPRI3	.20	.23	.24	.44	.47	.37	.24	.34	.39	.33	.17	.27	.27	.29	.31	
	PPRI4	.28	.33	.27	.43	.40	.39	.41	.35	.46	.36	.21	.26	.17	.25	.21	
	PPRI5	.27	.38	.30	.41	.42	.37	.27	.39	.50	.42	.34	.30	.21	.31	.33	
	PPRI6	.41	.45	.42	.53	.49	.41	.31	.38	.52	.43	.36	.30	.28	.30	.36	
	PPRI7	.44	.41	.42	.49	.40	.38	.34	.34	.46	.35	.28	.33	.29	.32	.31	

**Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study**

Constructs		IT Infrastructure			IT Investments			App Development			Architecture		
		TIF1	TIF2	TIF3	TIV1	TIV2	TIV3	TAD1	TAD2	TAD3	TA1	TA2	TA3
Formal Interaction	SPFI1	.07	.11	.05	.22	.26	.21	.33	.21	.27	.24	.20	.19
	SPFI2	.18	.10	.07	.27	.39	.36	.35	.37	.42	.30	.35	.24
	SPFI3	.12	.12	.09	.31	.31	.29	.32	.33	.36	.24	.23	.12
	SPFI4	.10	.13	.09	.30	.35	.33	.30	.31	.38	.28	.24	.25
	SPFI5	.16	.19	.14	.26	.30	.28	.34	.36	.32	.33	.29	.17
	SPFI6	.11	.12	.09	.24	.35	.35	.35	.39	.44	.32	.30	.32
Role Importance	SPRI1	.37	.24	.30	.42	.49	.59	.37	.52	.58	.61	.58	.53
	SPRI2	.18	.14	.16	.33	.37	.44	.34	.45	.46	.40	.32	.39
	SPRI3	.24	.14	.20	.37	.45	.56	.32	.52	.5	.48	.45	.41
	SPRI4	.25	.20	.17	.26	.36	.32	.34	.35	.33	.34	.40	.31
Reporting Level	SPRL1	.17	.13	.18	.21	.15	.16	.04	.06	.12	.20	.12	.05
Political Skill	PS1	.18	.05	.11	.14	.24	.27	.15	.33	.38	.21	.29	.16
	PS2	.18	.07	.06	.25	.34	.39	.28	.40	.44	.37	.38	.32
	PS3	.14	.03	.09	.29	.30	.31	.23	.33	.44	.29	.33	.27
	PS4	.12	.12	.14	.11	.22	.25	.32	.44	.40	.27	.25	.28
	PS5	.36	.22	.28	.32	.34	.39	.20	.33	.42	.42	.38	.35
	PS6	.05	.04	-.02	.08	.13	.16	.27	.31	.29	.13	.17	.07
	PS7	.17	.10	.11	.12	.18	.18	.07	.15	.20	.22	.21	.26
	PS8	.12	.08	.07	.19	.24	.25	.13	.23	.24	.21	.28	.26

**Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study**

Constructs		IT Infrastructure			IT Investments			App Development			Architecture		
		TIF1	TIF2	TIF3	TIV1	TIV2	TIV3	TAD1	TAD2	TAD3	TA1	TA2	TA3
	PS10	.20	.00	.11	.20	.19	.27	.11	.26	.37	.25	.23	.20
	PS11	.10	.05	.04	.10	.19	.15	.11	.20	.20	.08	.17	.05
	PS12	.12	.06	.05	.15	.17	.13	.08	.14	.09	.13	.20	.13
	PS13	.04	.00	.02	.11	.20	.18	.11	.25	.21	.12	.24	.13
	PS14	-.04	-.02	-.05	.08	.18	.22	.22	.31	.26	.21	.23	.23
	PS15	.01	-.03	-.01	.10	.20	.14	.04	.15	.21	.07	.16	.14
	PS16	.13	.11	.09	.11	.19	.19	.13	.23	.22	.13	.16	.10
	PS17	.10	.10	.06	.10	.23	.15	.26	.26	.29	.18	.26	.30
	PS18	.13	.06	.10	.09	.20	.23	.19	.28	.33	.22	.26	.26
Common Method Bias	CMB1	.03	.03	.02	.12	.16	.13	.13	.23	.21	.21	.18	.27

**Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study**

Constructs		Outsourcing			Persuading			Following			Making			Advice		
		TO1	TO2	TO3	SP1	SP2	SP3	SF1	SF2	SF3	SM1	SM2	SM3	SA1	SA2	SA3
Formal Interaction	SPFI1	.13	.35	.24	.40	.36	.28	.30	.43	.35	.31	.30	.23	.28	.27	.35
	SPFI2	.45	.43	.44	.48	.34	.36	.43	.39	.48	.34	.24	.35	.35	.35	.31
	SPFI3	.23	.38	.33	.40	.37	.31	.23	.39	.43	.32	.30	.29	.28	.36	.29
	SPFI4	.27	.35	.36	.46	.44	.41	.29	.44	.47	.36	.35	.39	.36	.37	.37
	SPFI5	.19	.39	.28	.30	.27	.26	.21	.30	.34	.29	.25	.25	.25	.37	.27
	SPFI6	.39	.35	.39	.41	.28	.34	.23	.30	.39	.40	.34	.39	.32	.28	.30
Role Importance	SPRI1	.48	.41	.51	.42	.36	.39	.32	.28	.42	.43	.31	.46	.51	.45	.46
	SPRI2	.47	.31	.49	.44	.39	.40	.26	.30	.43	.40	.33	.45	.42	.38	.40
	SPRI3	.59	.44	.56	.47	.36	.37	.28	.28	.46	.40	.32	.49	.51	.49	.49
	SPRI4	.40	.39	.42	.37	.29	.30	.35	.29	.38	.36	.31	.33	.36	.36	.34
Reporting Level	SPRL1	-.05	.16	.04	.08	.08	.03	.09	.17	.11	.19	.15	.16	.06	.11	.10
Political Skill	PS1	.29	.19	.29	.22	.13	.26	.13	.11	.29	.18	.08	.22	.26	.24	.18
	PS2	.39	.28	.42	.37	.31	.39	.30	.25	.36	.31	.22	.39	.43	.36	.37
	PS3	.23	.21	.36	.39	.35	.36	.17	.27	.33	.33	.31	.32	.34	.26	.31
	PS4	.30	.20	.32	.31	.22	.30	.12	.13	.27	.24	.22	.24	.31	.32	.26
	PS5	.26	.26	.38	.41	.41	.43	.22	.22	.32	.24	.20	.30	.42	.39	.38
	PS6	.33	.25	.31	.31	.20	.27	.10	.18	.25	.13	.13	.18	.22	.26	.19
	PS7	.17	.08	.23	.22	.24	.35	.22	.12	.22	.12	.16	.23	.25	.17	.22
	PS8	.30	.22	.34	.34	.28	.31	.15	.21	.31	.20	.24	.27	.33	.28	.31
	PS10	.17	.02	.25	.22	.25	.29	.15	.06	.16	.21	.12	.27	.29	.20	.17
	PS11	.24	.20	.26	.25	.25	.33	.25	.28	.39	.17	.16	.25	.24	.26	.25
	PS12	.19	.20	.26	.34	.25	.21	.15	.17	.20	.20	.26	.22	.22	.21	.22
	PS13	.24	.18	.27	.23	.16	.24	.20	.15	.31	.08	.14	.16	.21	.22	.16
	PS14	.20	.12	.24	.22	.19	.26	.16	.11	.18	.09	.14	.14	.28	.20	.23
	PS15	.14	.09	.22	.20	.17	.24	.11	.16	.28	.15	.19	.22	.22	.16	.21
	PS16	.23	.18	.21	.28	.23	.27	.19	.21	.29	.10	.07	.16	.19	.21	.18
	PS17	.27	.23	.36	.31	.28	.40	.15	.16	.33	.17	.20	.19	.33	.29	.30
	PS18	.22	.13	.24	.21	.22	.32	.17	.10	.25	.06	.03	.09	.27	.20	.19
	Common Meth Bias	CMB1	.10	.03	.18	.27	.26	.30	.14	.06	.12	.12	.17	.14	.17	.10



<b>Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study</b>											
Constructs		BK1	BK2	BK3	BK4	BK5	BK6	BK7	BK8	BK9	BK10
Business Knowledge	BK1	<b>.78</b>									
	BK2	.66	<b>.78</b>								
	BK3	.56	.59	<b>.78</b>							
	BK4	.45	.57	.59	<b>.78</b>						
	BK5	.67	.59	.58	.58	<b>.78</b>					
	BK6	.55	.60	.55	.51	.55	<b>.78</b>				
	BK7	.59	.57	.56	.43	.57	.52	<b>.78</b>			
	BK8	.53	.59	.58	.57	.56	.53	.67	<b>.78</b>		
	BK9	.47	.53	.47	.51	.47	.46	.53	.48	<b>.78</b>	
	BK10	.57	.53	.49	.48	.47	.47	.52	.54	.51	<b>.78</b>
Technical Knowledge	TK1	.57	.39	.46	.34	.44	.38	.32	.32	.42	.49
	TK2	.61	.39	.47	.27	.48	.35	.40	.34	.37	.47
	TK3	.52	.46	.44	.35	.38	.41	.45	.40	.47	.54
	TK4	.38	.40	.42	.44	.34	.42	.31	.35	.46	.47
	TK5	.32	.44	.40	.45	.35	.38	.24	.35	.36	.39
	TK6	.43	.42	.45	.40	.36	.38	.40	.38	.40	.51
	TK7	.34	.24	.32	.23	.30	.26	.42	.30	.32	.44
	TK8	.45	.32	.36	.22	.30	.28	.42	.33	.36	.53
	TK9	.59	.50	.49	.31	.39	.44	.43	.43	.39	.57
	TK10	.55	.46	.52	.39	.48	.37	.59	.56	.44	.54
External Connects.	PPE1	.09	.23	.06	.14	.07	.18	.00	.13	.11	.12
	PPE2	.15	.30	.14	.15	.15	.24	.04	.24	.07	.10
	PPE3	-.02	.23	.06	.16	.06	.19	-.07	.11	.02	.04
	PPE4	.06	.22	.08	.17	.12	.18	.08	.20	.11	.17
Internal Connects.	PP11	.17	.09	.08	.01	.10	.09	.09	.17	.06	.07
	PP12	.20	.07	.09	-.04	.10	.08	.10	.15	.04	.09
	PP13	.14	.21	.11	.14	.16	.21	.05	.17	.11	.13
External Reputation	PPRE1	.54	.34	.33	.19	.43	.37	.39	.28	.27	.42
	PPRE2	.51	.34	.26	.16	.37	.34	.32	.23	.27	.43
	PPRE3	.47	.33	.33	.16	.39	.38	.30	.24	.23	.30
	PPRE4	.33	.25	.22	.16	.30	.33	.29	.30	.25	.29
	PPRE5	.25	.27	.16	.21	.20	.29	.22	.36	.18	.28
	PPRE6	.36	.33	.27	.33	.35	.33	.30	.42	.33	.46
	PPRE7	.33	.24	.23	.17	.34	.26	.36	.31	.27	.37
Internal Reputation	PPRI1	.50	.37	.35	.24	.42	.40	.45	.37	.33	.50
	PPRI2	.47	.32	.31	.25	.43	.34	.37	.35	.31	.47
	PPRI3	.42	.37	.33	.32	.36	.35	.28	.40	.29	.46
	PPRI4	.35	.25	.22	.22	.40	.33	.27	.28	.26	.34
	PPRI5	.37	.31	.22	.26	.36	.31	.27	.30	.28	.37
	PPRI6	.33	.28	.25	.23	.31	.30	.34	.29	.31	.41
	PPRI7	.36	.30	.32	.27	.37	.37	.26	.23	.29	.37

<b>Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study</b>											
Constructs		TK1	TK2	TK3	TK4	TK5	TK6	TK7	TK8	TK9	TK10
Technical Knowledge	TK1	<b>.77</b>									
	TK2	.77	<b>.77</b>								
	TK3	.62	.61	<b>.77</b>							
	TK4	.57	.43	.51	<b>.77</b>						
	TK5	.33	.26	.35	.45	<b>.77</b>					
	TK6	.51	.50	.54	.53	.50	<b>.77</b>				
	TK7	.39	.48	.50	.34	.23	.56	<b>.77</b>			
	TK8	.53	.56	.56	.48	.29	.55	.58	<b>.77</b>		
	TK9	.62	.62	.61	.53	.42	.58	.44	.64	<b>.77</b>	
	TK10	.58	.64	.58	.45	.31	.46	.47	.59	.63	<b>.77</b>
External Connects.	PPE1	.03	-.02	.10	.11	.37	.28	.04	.00	.09	-.03
	PPE2	-.01	.02	.11	.03	.34	.21	.05	.03	.18	.11
	PPE3	-.16	-.18	-.02	.02	.36	.19	-.02	-.13	-.01	-.12
	PPE4	-.03	-.02	.11	.07	.36	.27	.10	.03	.11	.06
Internal Connects.	PPI1	.18	.21	.13	.04	.05	.18	.14	.16	.17	.19
	PPI2	.23	.27	.15	.03	.05	.15	.10	.21	.28	.24
	PPI3	.07	.05	.10	.10	.29	.21	.06	.05	.15	.07
External Reputation	PPRE1	.43	.47	.31	.31	.23	.46	.38	.46	.42	.34
	PPRE2	.43	.47	.33	.27	.21	.45	.38	.42	.40	.30
	PPRE3	.46	.46	.27	.27	.22	.37	.26	.30	.32	.27
	PPRE4	.31	.27	.25	.19	.15	.23	.25	.24	.17	.20
	PPRE5	.15	.08	.15	.22	.22	.29	.18	.13	.09	.09
	PPRE6	.31	.28	.28	.32	.27	.42	.36	.35	.25	.28
	PPRE7	.25	.30	.20	.18	.17	.33	.36	.37	.21	.27
Internal Reputation	PPRI1	.45	.46	.38	.34	.19	.35	.36	.45	.43	.43
	PPRI2	.46	.42	.32	.32	.19	.33	.31	.44	.39	.39
	PPRI3	.39	.31	.27	.34	.30	.32	.13	.28	.38	.32
	PPRI4	.36	.31	.23	.27	.18	.22	.21	.24	.21	.24
	PPRI5	.36	.26	.22	.40	.27	.34	.19	.25	.25	.23
	PPRI6	.47	.40	.33	.42	.26	.41	.28	.34	.35	.36
	PPRI7	.49	.42	.33	.38	.31	.39	.22	.28	.38	.30

**Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study**

Constructs		Business Knowledge									
		BK1	BK2	BK3	BK4	BK5	BK6	BK7	BK8	BK9	BK10
Formal Interaction	SPFI1	.17	.33	.28	.32	.20	.36	.23	.26	.28	.26
	SPFI2	.32	.31	.30	.27	.33	.45	.24	.25	.32	.34
	SPFI3	.27	.33	.15	.18	.24	.33	.18	.23	.24	.24
	SPFI4	.23	.31	.22	.20	.23	.32	.19	.27	.24	.22
	SPFI5	.33	.32	.18	.20	.35	.33	.15	.22	.19	.19
	SPFI6	.32	.32	.27	.26	.32	.36	.23	.24	.35	.29
Role Import.	SPRI1	.61	.44	.44	.25	.46	.47	.41	.34	.36	.44
	SPRI2	.50	.40	.36	.28	.44	.41	.41	.43	.33	.43
	SPRI3	.57	.40	.37	.24	.42	.46	.30	.35	.28	.47
	SPRI4	.26	.22	.17	.14	.21	.26	.12	.08	.21	.26
Reporting Level	SPRL1	.16	.17	.10	.04	.13	.15	.05	.06	.05	.04
Political Skill	PS1	.41	.23	.18	.18	.36	.33	.17	.17	.29	.30
	PS2	.43	.34	.29	.27	.36	.40	.22	.28	.33	.35
	PS3	.44	.37	.25	.25	.33	.36	.34	.26	.41	.40
	PS4	.45	.26	.27	.27	.49	.27	.27	.22	.28	.34
	PS5	.40	.26	.21	.13	.30	.31	.20	.21	.25	.31
	PS6	.22	.30	.15	.34	.26	.34	.10	.20	.31	.24
	PS7	.31	.16	.21	.12	.34	.29	.27	.25	.21	.22
	PS8	.21	.19	.12	.11	.13	.23	.15	.15	.21	.24
	PS10	.48	.24	.23	.10	.35	.23	.27	.23	.26	.34
	PS11	.25	.20	.11	.20	.26	.32	.09	.21	.22	.25
	PS12	.17	.15	.02	.08	.11	.17	.00	.04	.15	.25
	PS13	.32	.16	.13	.10	.35	.31	.21	.16	.18	.26
	PS14	.29	.21	.17	.21	.29	.28	.12	.20	.24	.29
	PS15	.20	.05	.03	-.02	.18	.15	.18	.08	.13	.11
	PS16	.15	.15	.09	.14	.19	.26	.06	.17	.15	.19
	PS17	.24	.10	.11	.11	.26	.19	.28	.17	.25	.19
	PS18	.35	.19	.27	.20	.36	.32	.32	.28	.29	.33
	Common Method Bias	CMB1	.30	.16	.13	.14	.35	.17	.18	.18	.22

**Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study**

Constructs		Technical Knowledge									
		TK1	TK2	TK3	TK4	TK5	TK6	TK7	TK8	TK9	TK10
Formal Interaction	SPFI1	.12	.09	.20	.35	.29	.28	.20	.17	.14	.20
	SPFI2	.31	.27	.31	.32	.26	.29	.28	.29	.27	.21
	SPFI3	.13	.11	.24	.33	.29	.22	.12	.15	.19	.17
	SPFI4	.19	.18	.23	.31	.32	.24	.10	.16	.22	.24
	SPFI5	.11	.14	.16	.28	.20	.16	.12	.09	.13	.14
	SPFI6	.34	.30	.33	.43	.31	.35	.25	.33	.31	.27
Role Import.	SPRI1	.54	.58	.43	.35	.19	.39	.36	.47	.53	.41
	SPRI2	.34	.37	.32	.27	.26	.33	.28	.40	.42	.38
	SPRI3	.45	.46	.38	.33	.27	.40	.31	.46	.55	.36

Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study													
Constructs		Technical Knowledge											
		TK1	TK2	TK3	TK4	TK5	TK6	TK7	TK8	TK9	TK10		
	SPRI4	.28	.26	.22	.23	.15	.25	.23	.22	.20	.09		
Reporting Level	SPRL1	.05	.05	.04	.19	.06	-.03	-.05	.04	.10	.10		
Political Skill	PS1	.38	.30	.26	.32	.19	.26	.17	.24	.26	.08		
	PS2	.36	.31	.27	.28	.21	.26	.19	.26	.27	.15		
	PS3	.38	.29	.30	.39	.26	.32	.16	.29	.30	.19		
	PS4	.37	.40	.26	.27	.21	.40	.33	.33	.27	.24		
	PS5	.37	.37	.22	.23	.15	.24	.11	.19	.27	.18		
	PS6	.12	.01	.15	.23	.31	.23	.01	-.04	.07	-.06		
	PS7	.25	.28	.10	.14	.10	.14	.11	.16	.14	.16		
	PS8	.21	.17	.16	.19	.20	.21	.05	.12	.23	.07		
	PS10	.41	.44	.30	.16	.09	.21	.26	.39	.33	.29		
	PS11	.17	.05	.09	.25	.26	.17	.02	.05	.08	-.06		
	PS12	.13	.07	.08	.17	.18	.15	.01	.09	.16	-.01		
	PS13	.24	.25	.19	.21	.21	.26	.20	.20	.22	.10		
	PS14	.26	.24	.21	.28	.25	.35	.22	.21	.19	.10		
	PS15	.17	.15	.06	.16	.08	.11	.06	.15	.10	.03		
	PS16	.13	.05	.08	.17	.24	.20	.03	.03	.11	-.02		
	PS17	.24	.26	.16	.16	.07	.20	.21	.15	.05	.12		
	PS18	.42	.43	.33	.27	.20	.39	.34	.31	.27	.26		
	Common Method Bias	CMB1	.28	.30	.14	.18	.15	.21	.12	.16	.15	.17	

Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study									
	External Connections for Prestige Power				Internal Connections for Prestige Power				
	PPE1	PPE2	PPE3	PPE4	PPI1	PPI2	PPI3		
PPE1	<b>.81</b>								
PPE2	.54	<b>.81</b>							
PPE3	.62	.63	<b>.81</b>						
PPE4	.55	.57	.66	<b>.81</b>					
PPI1	.23	.41	.19	.23	<b>.82</b>				
PPI2	.16	.36	.09	.18	.81	<b>.82</b>			
PPI3	.45	.53	.51	.48	.41	.37	<b>.82</b>		
PPRE1	.14	.10	.01	.09	.21	.18	.16		
PPRE2	.18	.12	.07	.15	.22	.19	.19		
PPRE3	.17	.11	.08	.07	.09	.05	.13		
PPRE4	.19	.13	.12	.13	.08	.00	.14		
PPRE5	.36	.25	.32	.28	.08	-.06	.20		
PPRE6	.24	.16	.16	.22	.15	.03	.18		
PPRE7	.15	.06	.05	.13	.12	.06	.12		
PPRI1	.07	.01	-.01	.07	.14	.16	.11		
PPRI2	.06	-.02	-.08	.02	.13	.15	.09		
PPRI3	.15	.04	.07	.12	.02	.05	.12		
PPRI4	.16	.07	.11	.13	.16	.13	.18		

Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study									
	External Connections for Prestige Power					Internal Connections for Prestige Power			
	PPE1	PPE2	PPE3	PPE4		PPI1	PPI2	PPI3	
PPRI5		.22	.07	.13	.16		.10	.03	.17
PPRI6		.17	.03	.00	.12		.10	.09	.13
PPRI7		.15	.04	.04	.11		.00	.04	.13
SPFI1		.22	.20	.29	.24		.01	-.11	.20
SPFI2		.17	.14	.12	.13		.03	.00	.18
SPFI3		.28	.26	.27	.29		-.07	-.15	.21
SPFI4		.27	.28	.20	.26		-.02	-.06	.22
SPFI5		.16	.21	.23	.21		.00	-.10	.18
SPFI6		.19	.17	.02	.12		.15	.11	.19
SPRI1		-.02	-.01	-.17	-.10		.16	.20	.04
SPRI2		.11	.15	-.05	.08		.08	.11	.12
SPRI3		.12	.16	-.04	.06		.15	.21	.16
SPRI4		.08	-.03	.00	.01		-.05	-.08	.03
SPRL1		-.06	.01	.04	-.02		-.09	-.11	.00

Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study														
	External Reputation for Prestige Power							Internal Reputation for Prestige Power						
	PPRE1	PPRE2	PPRE3	PPRE4	PPRE5	PPRE6	PPRE7	PPRI1	PPRI2	PPRI3	PPRI4	PPRI5	PPRI6	PPRI7
PPE1														
PPE2														
PPE3														
PPE4														
PPI1														
PPI2														
PPI3														
PPRE1	<b>.81</b>													
PPRE2	.78	<b>.81</b>												
PPRE3	.79	.71	<b>.81</b>											
PPRE4	.55	.52	.68	<b>.81</b>										
PPRE5	.45	.44	.50	.59	<b>.81</b>									
PPRE6	.61	.61	.57	.59	.67	<b>.81</b>								
PPRE7	.67	.62	.63	.54	.45	.65	<b>.81</b>							
PPRI1	.63	.61	.59	.45	.35	.49	.57	<b>.84</b>						
PPRI2	.68	.62	.66	.51	.39	.55	.62	.78	<b>.84</b>					
PPRI3	.50	.47	.54	.39	.40	.48	.45	.61	.70	<b>.84</b>				
PPRI4	.48	.48	.51	.48	.42	.48	.48	.59	.65	.51	<b>.84</b>			
PPRI5	.56	.56	.53	.46	.58	.60	.47	.53	.61	.54	.57	<b>.84</b>		
PPRI6	.56	.57	.55	.41	.42	.53	.49	.62	.69	.57	.55	.66	<b>.84</b>	
PPRI7	.55	.53	.61	.40	.27	.39	.41	.58	.65	.57	.49	.51	.68	<b>.84</b>
SPFI1	.30	.26	.34	.22	.28	.30	.27	.38	.34	.31	.27	.30	.33	.31
SPFI2	.45	.40	.50	.44	.29	.36	.40	.50	.55	.39	.43	.33	.41	.48
SPFI3	.27	.25	.31	.24	.33	.26	.19	.30	.30	.30	.26	.35	.29	.27
SPFI4	.28	.23	.37	.24	.26	.24	.24	.31	.35	.34	.25	.29	.35	.35

<b>Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study</b>														
	External Reputation for Prestige Power							Internal Reputation for Prestige Power						
	PPRE1	PPRE2	PPRE3	PPRE4	PPRE5	PPRE6	PPRE7	PPRI1	PPRI2	PPRI3	PPRI4	PPRI5	PPRI6	PPRI7
SPFI5	.28	.27	.29	.19	.28	.26	.18	.26	.23	.22	.26	.33	.19	.17
SPFI6	.42	.36	.40	.28	.20	.33	.35	.35	.42	.28	.30	.32	.39	.37
SPRI1	.60	.55	.56	.35	.19	.38	.46	.56	.55	.41	.37	.32	.40	.43
SPRI2	.55	.47	.50	.40	.31	.46	.52	.49	.55	.44	.36	.35	.40	.39
SPRI3	.65	.59	.56	.40	.32	.46	.48	.56	.61	.49	.40	.39	.46	.49
SPRI4	.37	.41	.35	.28	.25	.34	.32	.34	.35	.24	.31	.33	.36	.33
SPRL1	.10	.06	.14	.01	.02	-.02	-.01	.12	.07	.11	.07	.13	.02	.03

<b>Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study</b>											
Construct		External Connections for Prestige Power				Internal Connections for Prestige Power					
		PPE1	PPE2	PPE3	PPE4	PPI1	PPI2	PPI3			
Political Skill	PS1		.12	-.04	-.09	.00		.07		.08	.09
	PS2		.15	.05	-.03	.02		.06		.05	.10
	PS3		.20	-.01	-.02	.08		.04		.03	.11
	PS4		.09	.00	-.06	.06		.14		.11	.11
	PS5		.09	-.02	-.07	.03		.06		.08	.09
	PS6		.34	.20	.24	.27		-.02		-.07	.24
	PS7		.08	.05	-.03	.07		.18		.17	.14
	PS8		.20	.08	.01	.12		.05		.11	.14
	PS10		.00	-.05	-.17	-.06		.12		.15	.02
	PS11		.31	.12	.19	.21		-.03		-.07	.20
	PS12		.21	.09	.15	.21		.04		.06	.19
	PS13		.22	.13	.16	.25		.07		.09	.22
	PS14		.29	.16	.21	.25		.12		.06	.22
	PS15		.13	.01	-.09	.03		.13		.15	.11
	PS16		.31	.20	.24	.26		.09		.07	.25
	PS17		.07	-.05	-.16	.02		.11		.06	.06
	PS18		.14	.04	.02	.12		.18		.16	.14
	Common Method Bias	CMB1		.15	.02	.05	.17		.10		.10

<b>Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study</b>															
Construct		External Reputation for Prestige Power							Internal Reputation for Prestige Power						
		PPRE1	PPRE2	PPRE3	PPRE4	PPRE5	PPRE6	PPRE7	PPRI1	PPRI2	PPRI3	PPRI4	PPRI5	PPRI6	PPRI7
Polit. Skill	PS1	.43	.40	.39	.35	.26	.36	.36	.33	.40	.34	.36	.35	.28	.32
	PS2	.47	.43	.45	.40	.32	.44	.46	.40	.45	.38	.36	.31	.31	.34
	PS3	.50	.48	.44	.33	.31	.42	.46	.46	.49	.45	.38	.44	.46	.42
	PS4	.60	.54	.49	.31	.21	.44	.51	.44	.51	.36	.37	.37	.38	.41
	PS5	.52	.51	.53	.32	.24	.37	.44	.47	.50	.49	.37	.37	.43	.46
	PS6	.20	.24	.18	.20	.28	.30	.16	.14	.19	.26	.21	.28	.26	.30
	PS7	.51	.45	.51	.40	.26	.40	.53	.38	.39	.32	.36	.30	.29	.30
	PS8	.26	.28	.18	.11	.15	.22	.23	.23	.25	.26	.19	.23	.34	.31

<b>Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study</b>																
Construct		External Reputation for Prestige Power							Internal Reputation for Prestige Power							
		PPRE1	PPRE2	PPRE3	PPRE4	PPRE5	PPRE6	PPRE7	PPRI1	PPRI2	PPRI3	PPRI4	PPRI5	PPRI6	PPRI7	
	PS10	.50	.45	.49	.41	.18	.35	.48	.43	.48	.36	.33	.21	.20	.26	
	PS11	.37	.35	.37	.43	.52	.48	.38	.26	.33	.38	.40	.47	.32	.30	
	PS12	.28	.35	.17	.10	.17	.27	.25	.29	.28	.31	.26	.32	.34	.30	
	PS13	.45	.43	.40	.34	.27	.34	.41	.38	.37	.31	.38	.33	.31	.36	
	PS14	.47	.45	.44	.35	.35	.47	.49	.35	.35	.35	.32	.32	.30	.33	
	PS15	.38	.31	.30	.24	.20	.25	.37	.26	.32	.20	.27	.28	.28	.22	
	PS16	.32	.31	.35	.31	.33	.34	.32	.28	.34	.38	.32	.32	.31	.35	
	PS17	.39	.37	.31	.27	.23	.36	.41	.28	.32	.16	.29	.30	.36	.26	
	PS18	.50	.46	.53	.44	.29	.42	.48	.43	.45	.36	.38	.29	.35	.40	
Common Method Bias	CMB1	.49	.48	.46	.31	.22	.42	.54	.43	.46	.43	.39	.36	.39	.40	

<b>Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study</b>													
Construct		SPFI1	SPFI2	SPFI3	SPFI4	SPFI5	SPFI6	SPRI1	SPRI2	SPRI3	SPRI4	SPRL1	
	SPFI1	<b>.83</b>											
	SPFI2	.56	<b>.83</b>										
	SPFI3	.66	.49	<b>.83</b>									
	SPFI4	.66	.54	.74	<b>.83</b>								
	SPFI5	.57	.38	.71	.57	<b>.83</b>							
	SPFI6	.49	.53	.52	.57	.43	<b>.83</b>						
	SPRI1	.20	.43	.17	.23	.22	.41	<b>.78</b>					
	SPRI2	.25	.44	.32	.39	.26	.45	.54	<b>.78</b>				
	SPRI3	.18	.47	.26	.31	.23	.42	.66	.62	<b>.78</b>			
	SPRI4	.23	.35	.20	.19	.21	.29	.39	.28	.36	<b>.78</b>		
	SPRL1	.33	.13	.39	.30	.45	.18	.10	.06	.04	.04	<b>1.00</b>	
	PS1	.05	.36	.22	.18	.24	.40	.48	.41	.50	.31	.01	
	PS2	.23	.46	.26	.31	.24	.44	.55	.51	.57	.37	.02	
	PS3	.29	.39	.35	.35	.28	.46	.49	.46	.48	.35	.08	
	PS4	.17	.34	.21	.20	.29	.39	.48	.44	.49	.29	.03	
	PS5	.30	.41	.36	.40	.34	.41	.53	.44	.51	.33	.14	
	PS6	.30	.36	.40	.37	.32	.38	.17	.26	.28	.24	-.01	
	PS7	.18	.32	.18	.25	.23	.33	.44	.44	.43	.23	.06	
	PS8	.10	.23	.16	.24	.07	.29	.32	.32	.38	.25	-.08	
	PS10	.02	.31	.11	.13	.11	.28	.52	.46	.49	.21	.01	
	PS11	.18	.35	.34	.30	.29	.32	.27	.36	.40	.30	.02	
	PS12	.16	.20	.21	.18	.19	.20	.21	.22	.31	.26	.03	
	PS13	.13	.34	.29	.24	.31	.29	.35	.36	.44	.24	.05	
	PS14	.25	.34	.28	.27	.31	.36	.37	.38	.43	.26	.02	
	PS15	.07	.25	.18	.23	.16	.35	.34	.37	.37	.20	.00	
	PS16	.25	.36	.33	.34	.25	.32	.23	.31	.35	.21	.01	
	PS17	.22	.33	.26	.32	.25	.41	.36	.37	.32	.30	-.03	
	PS18	.20	.40	.20	.24	.19	.34	.45	.38	.43	.24	-.03	
Common Method Bias	CMB1	.14	.23	.19	.20	.24	.27	.35	.37	.37	.20	.04	

<b>Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study</b>									
	PS1	PS2	PS3	PS4	PS5	PS6	PS7	PS8	PS10
PS1	<b>.70</b>								
PS2	.58	<b>.70</b>							
PS3	.57	.57	<b>.70</b>						
PS4	.52	.46	.48	<b>.70</b>					
PS5	.50	.52	.57	.47	<b>.70</b>				
PS6	.42	.40	.45	.30	.37	<b>.70</b>			
PS7	.47	.49	.46	.46	.53	.23	<b>.70</b>		
PS8	.37	.39	.45	.24	.40	.38	.31	<b>.70</b>	
PS10	.50	.50	.44	.48	.45	.11	.47	.19	<b>.70</b>
PS11	.57	.52	.52	.34	.43	.50	.46	.38	.31
PS12	.30	.29	.40	.25	.37	.35	.27	.37	.15
PS13	.52	.42	.44	.48	.44	.33	.50	.31	.39
PS14	.52	.50	.51	.53	.49	.40	.51	.31	.42
PS15	.49	.44	.48	.38	.40	.25	.48	.37	.36
PS16	.41	.39	.39	.31	.42	.43	.37	.33	.22
PS17	.44	.45	.48	.43	.46	.36	.48	.38	.30
PS18	.50	.46	.43	.50	.48	.27	.51	.25	.48
CMB1	.45	.40	.50	.55	.54	.28	.57	.30	.45

<b>Table Q1 (cont): Discriminant Validity Analysis for the Essay 3 Full Study</b>									
	PS11	PS12	PS13	PS14	PS15	PS16	PS17	PS18	CMB1
PS1									
PS2									
PS3									
PS4									
PS5									
PS6									
PS7									
PS8									
PS10									
PS11	<b>.70</b>								
PS12	.37	<b>.70</b>							
PS13	.50	.34	<b>.70</b>						
PS14	.50	.34	.56	<b>.70</b>					
PS15	.45	.27	.43	.40	<b>.70</b>				
PS16	.49	.32	.43	.44	.33	<b>.70</b>			
PS17	.41	.25	.37	.39	.48	.30	<b>.70</b>		
PS18	.38	.18	.50	.53	.36	.37	.42	<b>.70</b>	
CMB1	.40	.37	.54	.59	.40	.38	.40	.50	<b>.70</b>



## APPENDIX R: Survey Cover Letter

### Information Concerning Participation in a Research Study: Clemson University

[Exit this survey](#)



#### **IT-Business Strategic Alignment: Essays Examining Dimensions of Alignment, Their Relationship with Firm Performance, and Executive Team Behaviors**

##### **Description of the Research and Your Participation**

You are invited to participate in a research study conducted by Jennifer Gerow, Varun Grover, and Jason Thatcher. The purpose of this research is to determine what factors influence the CIO's impact on the strategic and technical decisions of the firm. Your participation will involve the evaluation of your behavior and the behavior of the executive team members in your firm. The amount of time required for your participation will be 10-15 minutes answering questions on a web survey. This research is anonymous and no answer will be tied to you or your firm; additionally, there are no known risks associated with this research.

##### **Benefits to the Participating Individual**

The goal of this research is to empower CIOs like you to more positively influence your firms' top-level decision-makers. The research team will be happy to provide the results to any interested individual. The comprehensive report will provide an interpretation of data collected, visual presentation, and recommendations. This report will include an analysis of CIO perceptions of executive team behaviors. All monetary benefits will be provided by the company in charge of the panel.

**Confidentiality**

All data will be collected and maintained under strict standards to ensure the confidentiality of individual identities. No individual can be linked to his/her responses by anyone on the research team at any time.

**Voluntary Participation**

Your participation in this research study is voluntary. You may choose not to participate and you may withdraw your consent to participate at any time. You will not be penalized in any way should you decide not to participate or to withdraw from this study.

**Contact Information**

If you have any questions or concerns about this study or if any problems arise, please contact Jennifer Gerow (jgerow@clemson.edu, PhD Candidate), Varun Grover (vgrover@clemson.edu, William S. Lee Distinguished Professor of Information Systems), or Jason Thatcher (jthatch@clemson.edu, Associate Professor). If you have any questions or concerns about your rights as a research participant, please contact the Clemson University Office of Research Compliance (ORC) at 864-656-6460 or irb@clemson.edu. If you are outside of the Upstate South Carolina area, please use the ORC's toll-free number, 866-297-3071.

**Are you currently the head of your IT department (in other words, a CIO, VP of IT, or Director of IT)?**

- Yes
- No

# APPENDIX S: Full GLM Analysis Results

## Multivariate GLM

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power <sup>a</sup>
Corrected Model	TDTOTAL	3137.826 <sup>b</sup>	4	784.457	19.261	.000	.395	77.045	1.000
	SDTOTAL	2327.414 <sup>c</sup>	4	581.854	29.681	.000	.502	118.726	1.000
Intercept	TDTOTAL	522744.968	1	522744.968	12835.218	.000	.991	12835.218	1.000
	SDTOTAL	315086.212	1	315086.212	16073.135	.000	.993	16073.135	1.000
MeanSP	TDTOTAL	674.114	1	674.114	16.552	.000	.123	16.552	.981
	SDTOTAL	487.559	1	487.559	24.871	.000	.174	24.871	.999
MeanEP	TDTOTAL	463.058	1	463.058	11.370	.001	.088	11.370	.917
	SDTOTAL	134.881	1	134.881	6.881	.010	.055	6.881	.739
MeanPP	TDTOTAL	.816	1	.816	.020	.888	.000	.020	.052
	SDTOTAL	107.822	1	107.822	5.500	.021	.045	5.500	.643
MeanPS	TDTOTAL	1.823	1	1.823	.045	.833	.000	.045	.055
	SDTOTAL	.201	1	.201	.010	.919	.000	.010	.051
Error	TDTOTAL	4805.832	118	40.727					
	SDTOTAL	2313.187	118	19.603					
Total	TDTOTAL	533093.000	123						
	SDTOTAL	321105.000	123						
Corrected Total	TDTOTAL	7943.659	122						
	SDTOTAL	4640.602	122						

a. Computed using alpha = .05

b. R Squared = .395 (Adjusted R Squared = .375)

c. R Squared = .502 (Adjusted R Squared = .485)

Parameter Estimates

Dependent Variable	Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter	Observed Power <sup>a</sup>
						Lower Bound	Upper Bound			
TDTOTAL	Intercept	65.222	.576	113.293	.000	64.082	66.362	.991	113.293	1.000
	MeanSP	.500	.123	4.068	.000	.256	.743	.123	4.068	.981
	MeanEP	.250	.074	3.372	.001	.103	.397	.088	3.372	.917
	MeanPP	.010	.070	.142	.888	-.129	.149	.000	.142	.052
	MeanPS	.019	.091	.212	.833	-.160	.198	.000	.212	.055
SDTOTAL	Intercept	50.637	.399	126.780	.000	49.846	51.428	.993	126.780	1.000
	MeanSP	.425	.085	4.987	.000	.256	.594	.174	4.987	.999
	MeanEP	.135	.051	2.623	.010	.033	.237	.055	2.623	.739
	MeanPP	.114	.049	2.345	.021	.018	.211	.045	2.345	.643
	MeanPS	-.006	.063	-.101	.919	-.131	.118	.000	.101	.051

a. Computed using alpha = .05

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power <sup>a</sup>
Corrected Model	TDTOTAL	3524.921 <sup>b</sup>	7	503.560	13.105	.000	.444	91.738	1.000
	SDTOTAL	2458.731 <sup>c</sup>	7	351.247	18.513	.000	.530	129.593	1.000
Intercept	TDTOTAL	379219.499	1	379219.499	9869.389	.000	.988	9869.389	1.000
	SDTOTAL	230479.817	1	230479.817	12147.916	.000	.991	12147.916	1.000
MeanSP	TDTOTAL	551.509	1	551.509	14.353	.000	.111	14.353	.964
	SDTOTAL	436.342	1	436.342	22.998	.000	.167	22.998	.997
MeanEP	TDTOTAL	510.475	1	510.475	13.285	.000	.104	13.285	.951
	SDTOTAL	143.513	1	143.513	7.564	.007	.062	7.564	.779
MeanPP	TDTOTAL	5.703	1	5.703	.148	.701	.001	.148	.067
	SDTOTAL	67.626	1	67.626	3.564	.062	.030	3.564	.465
MeanPS	TDTOTAL	12.936	1	12.936	.337	.563	.003	.337	.089
	SDTOTAL	.598	1	.598	.032	.859	.000	.032	.054
MeanSP * MeanPS	TDTOTAL	138.738	1	138.738	3.611	.060	.030	3.611	.470
	SDTOTAL	35.538	1	35.538	1.873	.174	.016	1.873	.274
MeanEP * MeanPS	TDTOTAL	347.513	1	347.513	9.044	.003	.073	9.044	.847
	SDTOTAL	127.566	1	127.566	6.724	.011	.055	6.724	.730
MeanPP * MeanPS	TDTOTAL	90.670	1	90.670	2.360	.127	.020	2.360	.331
	SDTOTAL	21.851	1	21.851	1.152	.285	.010	1.152	.186
Error	TDTOTAL	4418.738	115	38.424					
	SDTOTAL	2181.870	115	18.973					
Total	TDTOTAL	533093.000	123						
	SDTOTAL	321105.000	123						
Corrected Total	TDTOTAL	7943.659	122						
	SDTOTAL	4640.602	122						

a. Computed using alpha = .05

b. R Squared = .444 (Adjusted R Squared = .410)

c. R Squared = .530 (Adjusted R Squared = .501)

Parameter Estimates

Dependent Variable	Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter	Observed Power <sup>a</sup>
						Lower Bound	Upper Bound			
TDTOTAL	Intercept	64.819	.852	99.345	.000	63.527	66.112	.988	99.345	1.000
	MeanSP	.462	.122	3.789	.000	.220	.704	.111	3.789	.964
	MeanEP	.266	.073	3.645	.000	.121	.411	.104	3.645	.951
	MeanPP	-.027	.069	-.385	.701	-.164	.111	.001	.385	.067
	MeanPS	.051	.089	.580	.563	-.124	.227	.003	.580	.089
	MeanSP * MeanPS	.025	.013	1.900	.060	-.001	.051	.030	1.900	.470
	MeanEP * MeanPS	-.025	.008	-3.007	.003	-.042	-.009	.073	3.007	.847
	MeanPP * MeanPS	.012	.008	1.536	.127	-.003	.027	.020	1.536	.331
SDTOTAL	Intercept	50.533	.458	110.218	.000	49.625	51.441	.991	110.218	1.000
	MeanSP	.411	.086	4.796	.000	.241	.581	.167	4.796	.997
	MeanEP	.141	.051	2.750	.007	.039	.243	.062	2.750	.779
	MeanPP	.092	.049	1.888	.062	-.005	.188	.030	1.888	.465
	MeanPS	.011	.062	.178	.859	-.112	.135	.000	.178	.054
	MeanSP * MeanPS	.013	.009	1.369	.174	-.006	.031	.016	1.369	.274
	MeanEP * MeanPS	-.015	.006	-2.593	.011	-.027	-.004	.055	2.593	.730
	MeanPP * MeanPS	.006	.005	1.073	.285	-.005	.016	.010	1.073	.186

a. Computed using alpha = .05

# Univariate GLM

## Tests of Between-Subjects Effects

Dependent Variable: TDTOTAL

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power <sup>a</sup>
Corrected Model	3137.826 <sup>a</sup>	4	784.457	19.261	.000	.395	77.045	1.000
Intercept	522744.968	1	522744.968	12835.218	.000	.991	12835.218	1.000
MeanSP	674.114	1	674.114	16.552	.000	.123	16.552	.981
MeanEP	463.058	1	463.058	11.370	.001	.088	11.370	.917
MeanPP	.816	1	.816	.020	.888	.000	.020	.052
MeanPS	1.823	1	1.823	.045	.833	.000	.045	.055
Error	4805.832	118	40.727					
Total	533083.000	123						
Corrected Total	7943.659	122						

a. R Squared = .395 (Adjusted R Squared = .375)  
b. Computed using alpha = .05

## Parameter Estimates

Dependent Variable: TDTOTAL

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter	Observed Power <sup>a</sup>
					Lower Bound	Upper Bound			
Intercept	65.222	.576	113.293	.000	64.082	66.362	.991	113.293	1.000
MeanSP	.500	.123	4.068	.000	.256	.743	.123	4.068	.981
MeanEP	.250	.074	3.372	.001	.103	.397	.088	3.372	.917
MeanPP	.010	.070	.142	.888	-.129	.149	.000	.142	.052
MeanPS	.019	.091	.212	.833	-.160	.198	.000	.212	.055

a. Computed using alpha = .05

## Tests of Between-Subjects Effects

Dependent Variable: SDTOTAL

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power <sup>a</sup>
Corrected Model	2327.414 <sup>a</sup>	4	581.854	29.681	.000	.502	118.726	1.000
Intercept	315086.212	1	315086.212	16073.135	.000	.993	16073.135	1.000
MeanSP	487.559	1	487.559	24.871	.000	.174	24.871	.999
MeanEP	134.881	1	134.881	6.881	.010	.055	6.881	.739
MeanPP	107.822	1	107.822	5.500	.021	.045	5.500	.643
MeanPS	.201	1	.201	.010	.919	.000	.010	.051
Error	2313.187	118	19.603					
Total	321105.000	123						
Corrected Total	4640.602	122						

a. R Squared = .502 (Adjusted R Squared = .485)  
b. Computed using alpha = .05

## Parameter Estimates

Dependent Variable: SDTOTAL

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter	Observed Power <sup>a</sup>
					Lower Bound	Upper Bound			
Intercept	50.637	.399	126.780	.000	49.846	51.428	.993	126.780	1.000
MeanSP	.425	.085	4.987	.000	.256	.594	.174	4.987	.999
MeanEP	.135	.051	2.623	.010	.033	.237	.055	2.623	.739
MeanPP	.114	.049	2.345	.021	.018	.211	.045	2.345	.643
MeanPS	-.006	.063	-.101	.919	-.131	.118	.000	.101	.051

a. Computed using alpha = .05

**Tests of Between-Subjects Effects**

Dependent Variable: TDTOTAL

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power <sup>b</sup>
Corrected Model	3524.921 <sup>a</sup>	7	503.560	13.105	.000	.444	91.738	1.000
Intercept	379219.499	1	379219.499	9869.389	.000	.988	9869.389	1.000
MeanSP	551.509	1	551.509	14.353	.000	.111	14.353	.964
MeanEP	510.475	1	510.475	13.285	.000	.104	13.285	.951
MeanPP	5.703	1	5.703	.148	.701	.001	.148	.067
MeanPS	12.936	1	12.936	.337	.563	.003	.337	.089
MeanSP * MeanPS	138.738	1	138.738	3.611	.060	.030	3.611	.470
MeanEP * MeanPS	347.513	1	347.513	9.044	.003	.073	9.044	.847
MeanPP * MeanPS	90.670	1	90.670	2.360	.127	.020	2.360	.331
Error	4418.738	115	38.424					
Total	533083.000	123						
Corrected Total	7943.659	122						

a. R Squared = .444 (Adjusted R Squared = .410)  
 b. Computed using alpha = .05

**Parameter Estimates**

Dependent Variable: TDTOTAL

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter
					Lower Bound	Upper Bound		
Intercept	64.819	.652	99.345	.000	63.527	66.112	.988	99.345
MeanSP	.462	.122	3.709	.000	.220	.704	.111	3.709
MeanEP	.266	.073	3.645	.000	.121	.411	.104	3.645
MeanPP	-.027	.068	-.385	.701	-.164	.111	.001	.385
MeanPS	.051	.089	.580	.563	-.124	.227	.003	.580
MeanSP * MeanPS	.025	.013	1.900	.060	-.001	.051	.030	1.900
MeanEP * MeanPS	-.025	.008	-3.007	.003	-.042	-.009	.073	3.007
MeanPP * MeanPS	.012	.008	1.536	.127	-.003	.027	.020	1.536

a. Computed using alpha = .05

**Tests of Between-Subjects Effects**

Dependent Variable:SDTOTAL

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power <sup>b</sup>
Corrected Model	2458.731 <sup>a</sup>	7	351.247	18.513	.000	.530	129.593	1.000
Intercept	230479.817	1	230479.817	12147.916	.000	.991	12147.916	1.000
MeanSP	436.342	1	436.342	22.998	.000	.167	22.998	.997
MeanEP	143.513	1	143.513	7.564	.007	.062	7.564	.779
MeanPP	67.626	1	67.626	3.564	.062	.030	3.564	.465
MeanPS	.598	1	.598	.032	.859	.000	.032	.054
MeanSP * MeanPS	35.538	1	35.538	1.873	.174	.016	1.873	.274
MeanEP * MeanPS	127.566	1	127.566	6.724	.011	.055	6.724	.730
MeanPP * MeanPS	21.851	1	21.851	1.152	.285	.010	1.152	.186
Error	2181.870	115	18.973					
Total	321105.000	123						
Corrected Total	4640.602	122						

a. R Squared = .530 (Adjusted R Squared = .501)  
 b. Computed using alpha = .05

**Parameter Estimates**

Dependent Variable:SDTOTAL

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter
					Lower Bound	Upper Bound		
Intercept	50.533	.458	110.218	.000	49.625	51.441	.991	110.218
MeanSP	.411	.086	4.796	.000	.241	.581	.167	4.796
MeanEP	.141	.051	2.750	.007	.039	.243	.062	2.750
MeanPP	.092	.049	1.888	.062	-.005	.188	.030	1.888
MeanPS	.011	.062	.178	.859	-.112	.135	.000	.178
MeanSP * MeanPS	.013	.009	1.369	.174	-.006	.031	.016	1.369
MeanEP * MeanPS	-.015	.006	-2.593	.011	-.027	-.004	.055	2.593
MeanPP * MeanPS	.006	.005	1.073	.285	-.005	.016	.010	1.073

a. Computed using alpha = .05

## REFERENCES

- Aerts, A.T.M., Goossenaerts, J.B.M., Hammer, D.K., and Wortmann, J.C. 2004. "Architectures in Context: On the Evolution of Business, Application Software, and ICT Platform Architectures," *Information & Management* (41:6), pp. 781-794.
- Ahearn, K.K., Ferris, G.R., Hochwarter, W.A., Douglas, C., and Ammeter, A.P. 2004. "Leader Political Skill and Team Performance," *Journal of Management* (30:3), pp. 309-327.
- Aiken, L.S., and West, S.G. 1991. *Multiple Regression: Testing and Interpreting Interactions*, Newbury Park, CA: Sage.
- Ammeter, A.P., Douglas, C.G., W.L., Hochwarter, W.A., and Ferris, G.R. 2002. "Toward a Political Theory of Leadership," *The Leadership Quarterly* (13:6), pp. 751-796.
- Anderson, J.C., and Gerbing, D.W. 1988. "Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach," *Psychological Bulletin* (103:3), May, pp. 411-423.
- Applegate, L.M., and Elam, J.J. 1992. "New Information Systems Leaders: A Changing Role in a Changing World," *MIS Quarterly* (16:4), pp. 469-490.
- Armstrong, C.P., and Sambamurthy, V. 1999. "Information Technology Assimilation in Firms: The Influence of Senior Leadership and IT Infrastructures," *Information Systems Research* (10:4), pp. 304-327.
- Armstrong, J.S., and Overton, T.S. 1977. "Estimating Nonresponse Bias in Mail Surveys," *Journal of Marketing Research* (14:3), pp. 396-402.
- Astley, W.G., and Sachdeva, P.S. 1984. "Structural Sources of Intraorganizational Power: A Theoretical Synthesis," *Academy of Management Review* (9:1), pp. 104-113.
- Austin, R.D., Nolan, R.L., and O'Donnell, S. 2009. *The Adventures of an IT Leader*, Boston, MA: Harvard Business Press.
- Avison, D., Jones, B., Powell, P., and Wilson, D.B. 2004. "Using and Validating the Strategic Alignment Model," *Journal of Strategic Information Systems* (13:3), pp. 223-246.
- Baets, W.R.J. 1992. "Aligning Information Systems with Business Strategy," *Journal of Strategic Information Systems* (1:4), pp. 205-213.
- Baets, W.R.J. 1996. "Some Empirical Evidence on IS Strategy Alignment in Banking," *Information & Management* (30:4), pp. 155-177.
- Banker, R.D., Hu, N., Pavlou, P.A., and Luftman, J. 2011. "CIO Reporting Structure, Strategic Positioning, and Firm Performance," *MIS Quarterly* (35:2), pp. 487-504.
- Barclay, D., Higgins, C., and Thomson, R. 1995. "The Partial Least Squares Approach (PLS) To Causal Modeling, Personal Computer Adoption and Use As An Illustration," *Technology Studies* (2:2), pp. 285-309.
- Barney, J.B. 1991. "Firm Resources and Sustained Competitive Advantage," *Journal of Management* (17:1), March, pp. 99-120.
- Barua, A., Konana, P., Whinston, A.B., and Yin, F. 2004. "An Empirical Investigation of Net-Enabled Business Value," *MIS Quarterly* (28:4), December, pp. 585-620.



- Bassellier, G., and Benbasat, I. 2004. "Business Competence of Information Technology Professionals: Conceptual Development and Influence on IT-Business Partnerships," *MIS Quarterly* (28:4), December, pp. 673-694.
- Bassellier, G., Benbasat, I., and Reich, B.H. 2003. "The Influence of Business Managers' IT Competence on Championing IT," *Information Systems Research* (14:4), pp. 317-336.
- Benbya, H., and McKelvey, B. 2006. "Using Coevolutionary and Complexity Theories to Improve IS Alignment: A Multi-Level Approach," *Journal of Information Technology* (21:4), pp. 284-298.
- Bendahan, S., Camponovo, G., Monzani, J.S., and Pigneur, Y. 2005. "Negotiation in Technology Landscapes: An Actor-Issue Analysis," *Journal of Management Information Systems* (21:4), pp. 137-172.
- Bergeron, F., Raymond, L., and Rivard, S. 2001. "Fit in Strategic Information Technology Management Research: An Empirical Comparison of Perspectives," *OMEGA International Journal of Management Science* (29:2), pp. 125-142.
- Bergeron, F., Raymond, L., and Rivard, S. 2004. "Ideal Patterns of Strategic Alignment and Business Performance," *Information & Management* (41:8), pp. 1003-1020.
- Bergman, M., Lyytinen, K., and Mark, G. 2007. "Boundary Objects in Design: An Ecological View of Design Artifacts," *Journal of the Association for Information Systems* (8:11), pp. 546-568.
- Bharadwaj, S., Bharadwaj, S., and Bendoly, E. 2007. "The Performance Effects of Complementarities between Information Systems, Marketing, Manufacturing, and Supply Chain Processes," *Information Systems Research* (18:4), pp. 437-453.
- Bhattacharjee, A. 2001. "Understanding Information Systems Continuance: An Expectation-Confirmation Model," *MIS Quarterly* (25:3), September, pp. 351-370.
- Blass, F.R., and Ferris, G.R. 2007. "Leader Reputation: The Role of Mentoring, Political Skill, Contextual Learning, and Adaptation," *Human Resource Management* (46:1), pp. 5-19.
- Bobko, P., and Roth, P.L. 2003. "Meta-Analysis and Validity Generalization as Research Tools: Issues of Sample Bias and Degrees of Mis-specification," in *Validity Generalization: A Critical Review*, K.R. Murphy (ed.), Mahwah, NJ: Lawrence Erlbaum Associates, pp. 67-90.
- Boddy, D., and Paton, R. 2005. "Maintaining Alignment over the Long-Term: Lessons from the Evolution of an Electronic Point of Sale System," *Journal of Information Technology* (20:3), pp. 141-151.
- Boonstra, J.J., and Bennebroek Gravenhorst, K.M. 1998. "Power Dynamics and Organizational Change: A Comparison of Perspectives," *European Journal of Work and Organizational Psychology* (7:2), pp. 97-120.
- Boudreau, M.-C., Gefen, D., and Straub, D.W. 2001. "Validation in Information Systems Research: A State-of-the-Art Assessment," *MIS Quarterly* (25:1), March, pp. 1-16.

- Brass, D.J., and Burkhardt, M.E. 1993. "Potential Power and Power Use: An Investigation of Structure and Behavior," *Academy of Management Journal* (36:3), pp. 441-470.
- Brass, D.J., Galaskiewicz, J., Greve, H.R., and Wenpin, T. 2004. "Taking Stock of Networks and Organizations: A Multilevel Perspective," *Academy of Management Journal* (47:6), December, pp. 795-818.
- Broadbent, M. 2004. "Where's the Strategy?," *CIO Insight* (46), pp. 35-36.
- Broadbent, M., and Weill, P. 1993. "Improving Business and Information Strategy Alignment: Learning from the Banking Industry," *IBM Systems Journal* (32:1), pp. 162-179.
- Broadbent, M., Weill, P., and Clair, D.S. 1999a. "The Implications of Information Technology Infrastructure for Business Process Redesign," *MIS Quarterly* (23:2), June, pp. 159-182.
- Broadbent, M., Weill, P., and Neo, B.S. 1999b. "Strategic Context and Patterns of IT Infrastructure Capability," *Journal of Strategic Information Systems* (8:2), pp. 157-187.
- Brown, C.V. 1999. "Horizontal Mechanisms under Differing IS Organization Contexts," *MIS Quarterly* (23:3), pp. 421-454.
- Brown, C.V., and Magill, S.L. 1994. "Alignment of the IS Functions with the Enterprise: Toward a Model of Antecedents," *MIS Quarterly* (18:4), December, pp. 371-403.
- Brown, C.V., and Magill, S.L. 1998. "Reconceptualizing the Context-Design Issue for the Information Systems Function," *Organization Science* (9:2), pp. 176-194.
- Brown, E.H., Karwan, K.R., and Weitzel, J.R. 1988. "The Chief Information Officer in Smaller Organizations," *Information Management Review* (4:2), pp. 25-35.
- Bunderson, J.S. 2003. "Team Member Functional Background and Involvement in Management Teams: Direct Effects and the Moderating Role of Power Centralization," *Academy of Management Journal* (46:4), pp. 458-474.
- Burkhardt, M.E., and Brass, D.J. 1990. "Changing Patterns or Patterns of Change: The Effects of a Change in Technology on Social Network Structure and Power," *Administrative Science Quarterly* (35:1), pp. 104-127.
- Burn, J.M. 1993. "Information Systems Strategies and the Management of Organizational Change - A Strategic Alignment Model," *Journal of Information Technology* (8:4), pp. 205-216.
- Burn, J.M. 1996. "IS Innovation and Organizational Alignment - A Professional Juggling Act," *Journal of Information Technology* (11:1), pp. 3-12.
- Burn, J.M., and Szeto, C. 2000. "A Comparison of the Views of Business and IT Management on Success Factors for Strategic Alignment," *Information and Management* (37), pp. 197-216.
- Byrd, T.A., Lewis, B.R., and Bryan, R.W. 2006. "The Leveraging Influence of Strategic Alignment on IT Investment: An Empirical Examination," *Information & Management* (43:3), pp. 308-321.
- Byrd, T.A., and Turner, D.B. 2001. "An Exploratory Analysis of the Value of the Skills of IT Personnel: Their Relationship to IS Infrastructure and Competitive Advantage," *Decision Sciences* (32:1), pp. 21-54.

- Byrd, T.A., and Turner, D.E. 2000. "Measuring the Flexibility of Information Technology Infrastructure: Exploratory Analysis of a Construct," *Journal of Management Information Systems* (17:1), Summer, pp. 167-208.
- Carr, N.G. 2003. "IT Doesn't Matter," *Harvard Business Review* (81:5), pp. 41-49.
- Carte, T.A., and Russell, C.J. 2003. "In pursuit of Moderation: Nine Common Errors and Their Solutions," *MIS Quarterly* (27:3), September, pp. 479-501.
- Carter, M., Grover, V., and Thatcher, J.B. 2011. "The Emerging CIO Role of Business Technology Strategist," *MIS Quarterly Executive* (10:1), pp. 19-29.
- Celuch, K., Murphy, G.B., and Callaway, S.K. 2007. "More Bang for Your Buck: Small Firms and the Importance of Aligned Information Technology Capabilities and Strategic Flexibility," *Journal of High Technology Management Research* (17:2), pp. 187-197.
- Chan, Y.E., and Huff, S.L. 1992. "Strategy: An Information Systems Research Perspective," *Journal of Strategic Information Systems* (1:4), pp. 191-204.
- Chan, Y.E., Huff, S.L., Barclay, D.W., and Copeland, D.G. 1997. "Business Strategic Orientation, Information Systems Strategic Orientation, and Strategic Alignment," *Information Systems Research* (8:2), pp. 125-150.
- Chan, Y.E., and Reich, B.H. 2007. "IT Alignment: What Have We Learned?," *Journal of Information Technology* (22:4), pp. 297-315.
- Chan, Y.E., Sabherwal, R., and Thatcher, J.B. 2006. "Antecedents and Outcomes of Strategic IS Alignment: An Empirical Investigation," *IEEE Transactions on Engineering Management* (53:1), pp. 27-47.
- Chand, D., Hachey, G., Hunton, J., Owhoso, V., and Vasudevan, S. 2005. "A Balanced Scorecard Based Framework for Assessing the Strategic Impacts of ERP Systems," *Computers in Industry* (56:6), pp. 558-572.
- Chandler, A. 1962. *Strategy and Structure: Chapters in the History of the Industrial Enterprise*, Cambridge, Massachusetts, U.S.A.: MIT Press.
- Chang, H.L., Wang, K., and Chiu, I. 2008. "Business-IT Fit in E-Procurement Systems: Evidence from High-Technology Firms in China," *Information Systems Journal* (18:4), pp. 381-404.
- Chatterjee, D., Richardson, V.J., and Zmud, R.W. 2001. "Examining the Shareholder Wealth Effects of Announcements of Newly Created CIO Positions," *MIS Quarterly* (25:1), pp. 43-70.
- Chen, D.Q., Mocker, M., Preston, D.S., and Teubner, A. 2010a. "Information Systems Strategy: Reconceptualization, Measurement, and Implications," *MIS Quarterly* (34:2), pp. 233-259.
- Chen, D.Q., Preston, D.S., and Xia, W. 2010b. "Antecedents and Effects of CIO Supply-Side and Demand-Side Leadership: A Staged Maturity Model," *Journal of Management Information Systems* (27:1), pp. 231-271.
- Chen, L. 2010. "Business-IT Alignment Maturity of Companies in China," *Information & Management* (47:1), pp. 9-16.
- Chin, W.W. 1998. "Issues and Opinion on Structural Equation Modeling," *MIS Quarterly* (22:1), March, pp. vii-xvi.
- Chin, W.W., and Frye, T. 1996. *PLS Graph*, Calgary, Canada: University of Calgary.

- Chin, W.W., Marcolin, B.L., and Newsted, P.R. 2003. "A Partial Least Squares Latent Variable Modeling Approach for Measuring Interaction Effects: Results from a Monte Carlo Simulation Study and an Electronic-Mail Emotion/Adoption Study," *Information Systems Research* (14:2), June, pp. 189-220.
- Choe, J.M. 2003. "The Effect of Environmental Uncertainty and Strategic Applications of IS on a Firm's Performance," *Information & Management* (40:4), pp. 257-268.
- Choe, J.M., Lee, Y.H., and Park, K.C. 1998. "The Relationship Model between the Influence Factors and the Strategic Applications of Information Systems," *European Journal of Information Systems* (7:2), pp. 137-149.
- Chowa, C.K. 2010. "CIO Turnover, IS Alignment, and Revolutionary Change," Americas Conference on Information Systems (AMCIS), Lima, Peru, pp. 1-6.
- Chung, S.H., Rainer Jr., R.K., and Lewis, B.R. 2003. "The Impact of Information Technology Infrastructure Flexibility on Strategic Alignment and Applications Implementation," *Communications of the Association for Information Systems* (11), pp. 191-206.
- Churchill, G.A. 1979. "A Paradigm for Developing Better Measures of Marketing Constructs," *Journal of Marketing Research* (16:1), pp. 64-73.
- Clark, L.A., and Watson, D. 1995. "Constructing Validity: Basic Issues in Objective Scale Development," *Psychological Assessment* (7:3), pp. 309-319.
- Cohen, J. 1988. *Statistical Power Analysis for the Behavioral Sciences*, (Second ed.), Hillsdale, New Jersey, U.S.A.: L. Erlbaum Associates.
- Cohen, J., Cohen, P., West, S.G., and Aiken, L.S. 2003. *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*, (3rd ed.), Mahwah, NJ: Lawrence Erlbaum Associates.
- Conboy, K. 2009. "Agility from First Principles: Reconstructing the Concept of Agility in Information Systems Development," *Information Systems Research* (20:3), pp. 329-354.
- Conner, K.R. 1991. "A Historical Comparison of Resource-Based Theory and Five Schools of Thought Within Industrial Organization Economics: Do We Have a New Theory of the Firm?," *Journal of Management* (17:1), pp. 121-154.
- Cooper, B.L., Watson, H.J., Wixom, B.H., and Goodhue, D.L. 2000. "Data Warehousing Supports Corporate Strategy at First American Cooperation," *MIS Quarterly* (24:4), pp. 547-567.
- Corea, S. 2006. "Information Technology and the Modalisation of Organisational Behaviour: A Theoretical Framework," *Journal of Information Technology* (21:2), pp. 86-98.
- Cragg, P., King, M., and Hussin, H. 2002. "IT Alignment and Firm Performance in Small Manufacturing Firms," *Journal of Strategic Information Systems* (11:2), pp. 109-132.
- Cragg, P., Tagliavini, M., and Mills, A. 2007. "Evaluating the Alignment of IT with Business Processes in SMEs," in *Australasian (ACIS)*, Toowoomba, pp. 38-48.
- Cronbach, L.J., and Shavelson, R.J. 2004. "My Current Thoughts on Coefficient Alpha and Successor Procedures," *Educational and Psychological Measurement* (64:3), pp. 391-418.

- Croteau, A.M., and Bergeron, F. 2001. "An Information Technology Trilogy: Business Strategy, Technological Deployment and Organizational Performance," *Journal of Strategic Information Systems* (10:2), pp. 77-99.
- Croteau, A.M., and Raymond, L. 2004. "Performance Outcomes of Strategic and IT Competencies Alignment," *Journal of Information Technology* (19:3), pp. 178-190.
- Cumps, B., Martens, D., De Backer, M., Haesen, R., Viaene, S., Dedene, G., Baesens, B., and Snoeck, M. 2009. "Inferring Comprehensible Business/ICT Alignment Rules," *Information & Management* (46:2), pp. 116-124.
- Daft, R., and Lengel, R. 1986. "Organizational Information Requirements, Media Richness and Structural Design," *Management Science* (32:5), pp. 554-571.
- Dahan, N. 2005. "Can There be a Resource-Based View of Politics?," *International Studies of Management and Organization* (35:2), pp. 8-27.
- Daniel, W.W., and Terrell, J.C. 1995. *Business Statistics: For Management and Economics*, (7th ed.), Boston, MA: Houghton Mifflin Company.
- Das, S.R., Zahra, S.A., and Warkentin, M.E. 1994. "Integrating the Content and Process of Strategic MIS Planning with Competitive Strategy," *Decision Sciences* (25:2), pp. 953-984.
- De Haes, S., and Van Grembergen, W. 2008. "An Exploratory Study into the Design of an IT Governance Minimum Baseline through Delphi Research," *Communications of the Association for Information Systems* (22:Article 24), pp. 443-458.
- De Haes, S., and Van Grembergen, W. 2009. "An Exploratory Study into IT Governance Implementations and its Impact on Business/IT Alignment," *Information Systems Management* (26:2), pp. 123-137.
- Dennis, A.R., Wixom, B.H., and Vandenberg, R.J. 2001. "Understanding Fit and Appropriation Effects in Group Support Systems via Meta-Analysis," *MIS Quarterly* (25:2), pp. 167-193.
- Doherty, N.F., Marples, C.G., and Suhaimi, A. 1999. "The Relative Success of Alternative Approaches to Strategic Information Systems Planning: An Empirical Analysis," *Journal of Strategic Information Systems* (8:3), pp. 263-283.
- Dong, L., Neufeld, D., and Higgins, C. 2009. "Top Management Support of Enterprise Systems Implementations," *Journal of Information Technology* (24:1), pp. 55-80.
- Dorociak, J.J. 2007. "The Alignment between Business and Information System Strategies in Small Banks: An Analysis of Performance Impact," Capella University, p. 265.
- Drazin, R., and Van de Ven, A.H. 1985. "Alternative Forms of Fit in Contingency Theory," *Administrative Science Quarterly* (30:4), December, pp. 514-539.
- Duncan, N.B. 1995. "Capturing Flexibility of Information Technology Infrastructure: A Study of Resource Characteristics and their Measure," *Journal of Management Information Systems* (12:2), pp. 37-57.
- Earl, M.J., and Feeny, D.F. 1994. "Is Your CIO Adding Value?," *Sloan Management Review* (35:3), pp. 11-20.
- Editor. 2001. "Closing the Gap: Managing Alignment," *CIO Magazine*:January 1),

- Eisenhardt, K.M., and Zbaracki, M.J. 1992. "Strategic Decision Making," *Strategic Management Journal* (13:Special Issue), pp. 17-37.
- Emerson, R.M. 1962. "Power-Dependence Relations," *American Sociological Review* (27:1), February, pp. 31-41.
- Enns, H.G., Huff, S.L., and Golden, B.R. 2001. "How CIOs Obtain Peer Commitment to Strategic IS Proposals: Barriers and Facilitators," *Journal of Strategic Information Systems* (10:1), pp. 3-14.
- Enns, H.G., Huff, S.L., and Golden, B.R. 2003a. "CIO Influence Behaviors: The Impact of Technical Background," *Information & Management* (40:5), pp. 467-485.
- Enns, H.G., Huff, S.L., and Higgins, C.A. 2003b. "CIO Lateral Influence Behaviors: Gaining Peers' Commitment to Strategic Information Systems," *MIS Quarterly* (27:1), pp. 155-176.
- Enns, H.G., McFarlin, D.B., and Huff, S.L. 2007. "How CIOs Can Effectively Use Influence Behaviors," *MIS Quarterly Executive* (6:1), pp. 29-38.
- Enns, H.G., McFarlin, D.B., and Sweeney, P.D. 2011. "How CIOs Overcome the Competing Values Challenge: Irish CIOs' Perspectives," *Communications of the Association for Information Systems* (28:1), pp. 549-560.
- Fabrigar, L.R., Wegener, D.T., MacCallum, R.C., and Strahan, E.J. 1999. "Evaluating the Use of Exploratory Factor Analysis in Psychological Research," *Psychological Methods* (4:3), pp. 272-299.
- Falbe, C.M., and Yukl, G. 1992. "Consequences for Managers of Using Single Influence Tactics and Combinations of Tactics," *Academy of Management Journal* (35:3), pp. 638-652.
- Feeny, D.F., Edwards, B.R., and Simpson, K.M. 1992. "Understanding the CEO/CIO Relationship," *MIS Quarterly* (16:4), pp. 435-448.
- Ferris, G.R., Treadway, D.C., Kolodinsky, R.W., Hochwarter, W.A., Kacmar, C., Douglas, C., and Frink, D.D. 2005. "Development and Validation of the Political Skill Inventory," *Journal of Management* (31:1), pp. 126-152.
- Ferris, G.R., Treadway, D.C., Perrewe, P.L., Brouer, R.L., Douglas, C., and Lux, S. 2007. "Political Skill in Organizations," *Journal of Management* (33:3), pp. 290-320.
- Feurer, R., Chaharbaghi, K., Weber, M., and Wargin, J. 2000. "Aligning Strategies, Processes, and IT: A Case Study," *Information Systems Management* (17:1), pp. 23-34.
- Fink, L., and Neumann, S. 2009. "Exploring the Perceived Business Value of the Flexibility Enabled by Information Technology Infrastructure," *Information & Management* (46:2), pp. 90-99.
- Finkelstein, S. 1992. "Power in Top Management Teams: Dimensions, Measurement, and Validation," *Academy of Management Journal* (35:3), pp. 505-538.
- Finlay, P.N., and Forghani, M. 1998. "A Classification of Success Factors for Decision Support Systems," *Journal of Strategic Information Systems* (7:1), pp. 53-70.
- Floyd, S.W., and Wooldridge, B. 1990. "Path Analysis of the Relationship between Competitive Strategy, Information Technology, and Financial Performance," *Journal of Management Information Systems* (7:1), Summer, pp. 47-64.

- Forsyth, B.H., and Lessler, J.T. 1991. "Cognitive Laboratory Methods: A Taxonomy," in *Measurement Errors in Surveys*, P.P. Biemer, R.M. Groves, L.E. Lyberg, N.A. Mathiowietz and S. Sudman (eds.), New York: Wiley, pp. 393-418.
- Fowler, A., and Jeffs, B. 1998. "Examining Information Systems Outsourcing: A Case Study from the United Kingdom," *Journal of Information Technology* (13:2), pp. 111-126.
- French, J.R.P., and Raven, B. 1959. "The Bases of Social Power," in *Group Dynamics*, D. Cartwright and A. Zander (eds.), New York, NY: Harper & Row, pp. 150-167.
- Gefen, D., Straub, D.W., and Boudreau, M.-C. 2000. "Structural Equation Modeling and Regression: Guidelines for Research Practice," *Communications of the Association for Information Systems* (4:7), August, pp. 1-77.
- Gerow, J.E., Grover, V., Roberts, N., and Thatcher, J.B. 2010. "The Diffusion of Second Generation Statistical Techniques in Information Systems Research from 1990-2008," *Journal of Information Technology Theory and Application* (11:4), pp. 5-28.
- Gerth, A.B., and Rothman, S. 2007. "The Future IS Organization in a Flat World," *Information Systems Management* (24:2), pp. 103-111.
- Giordano, G., and George, J. 2009. "Deception Detection, Task Complexity, and Group Member Experience in Computer-Mediated Group Settings," SIGHCI 2009 Proceedings, pp. 1-5.
- Glass, G.V. 1981. *Meta-Analysis in Social Research*, Beverly Hills, CA: Sage Publications.
- Gottschalk, P., and Solli-Saether, H. 2001. "Differences in Stage of Integration between Business Planning and Information Systems Planning According to Value Configurations," *Informing Science* (4:1), pp. 1-10.
- Grant, G.G. 2003. "Strategic Alignment and Enterprise Systems Implementation: The Case of Metalco," *Journal of Information Technology* (18:3), pp. 159-175.
- Greve, H.R., and Mitsuhashi, H. 2007. "Power and Glory: Concentrated Power in Top Management Teams," *Organization Studies* (28:8), pp. 1197-1221.
- Griffith, T.L., Fuller, M.A., and Northcraft, G.B. 1998. "Facilitator Influence in Group Support Systems: Intended and Unintended Effects," *Information Systems Research* (9:1), pp. 20-36.
- Grover, V., Jeong, S., Kettinger, W.J., and Lee, C.C. 1993. "The Chief Information Officer: A Study of Managerial Roles," *Journal of Management Information Systems* (10:2), pp. 107-130.
- Grover, V., and Segars, A.H. 2005. "An Empirical Evaluation of Stages of Strategic Information Systems Planning: Patterns of Process Design and Effectiveness," *Information & Management* (42:5), pp. 761-779.
- Gupta, Y.P., Karimi, J., and Somers, T.M. 1997. "Alignment of a Firm's Competitive Strategy and Information Technology Management Sophistication: The Missing Link," *IEEE Transactions on Engineering Management* (44:4), pp. 399-413.
- Hackathorn, R.D., and Karimi, J. 1988. "A Framework for Comparing Information Engineering Methods," *MIS Quarterly* (12:2), pp. 203-220.

- Hair, J.F., Black, B., Babin, B., Anderson, R.E., and Tatham, R.L. 2006. *Multivariate Data Analysis*, (6th ed.), NJ: Pearson Education.
- Hambrick, D.C., and Finkelstein, S. 1987. "Managerial Discretion: A Bridge between Polar Views of Organizational Outcomes," *Research in Organizational Behavior* (9), pp. 369-407.
- Hambrick, D.C., and Mason, P.A. 1984. "Upper Echelons: The Organization as a Reflection of its Top Managers," *Academy of Management Review* (9:2), pp. 193-206.
- Hansen, M.T. 2009. *Collaboration: How Leaders Avoid the Traps, Create Unity, and Reap Big Results*, Boston, MA: Harvard Business Press.
- Harman, H.H. 1976. *Modern Factor Analysis*, (3rd ed.), Chicago: University of Chicago Press.
- Harrigan, K.R. 1983. "Research Methodologies for Contingency Approaches to Business Strategy," *Academy of Management Review* (8:3), pp. 398-405.
- Hedges, L.V., and Vevea, J.L. 1998. "Fixed and Random Effects Models in Meta-Analysis," *Psychological Methods* (3:4), pp. 486-504.
- Heim, G.R., and Peng, D.X. 2010. "The Impact of Information Technology Use on Plant Structure, Practices, and Performance: An Exploratory Study," *Journal of Operations Management* (28:2), pp. 144-162.
- Henderson, J., and Venkatraman, N. 1993. "Strategic Alignment: Leveraging Information Technology for Transforming Organizations," *IBM Systems Journal* (32:1), pp. 4-16.
- Henderson, J.C., and Sifonis, J.G. 1988. "The Value of Strategic IS Planning: Understanding Consistency, Validity, and IS Markets," *MIS Quarterly* (12:2), pp. 187-200.
- Henderson, J.C., and Venkatraman, H. 1999. "Strategic Alignment: Leveraging Information Technology for Transforming Organizations," *IBM Systems Journal* (38:2/3), pp. 472-484.
- Henry, R.M. 2004. "The Role of Knowledge in Information Technology Project Governance," in *Joseph M. Katz Graduate School of Business*, University of Pittsburgh, Pittsburgh, PA, p. 131.
- Hitt, L.M., and Brynjolfsson, E. 1996. "Productivity, Business Profitability, and Consumer Surplus: Three Different Measures of Information Technology Value," *MIS Quarterly* (20:2), June, pp. 121-142.
- Hitt, L.M., Wu, D.J., and Zhou, X. 2002. "Investment in Enterprise Resource Planning: Business Impact and Productivity Measures," *Journal of Management Information Systems* (19:1), Summer, pp. 71-98.
- Hofer, C.W. 1975. "Toward a Contingency Theory of Business Strategy," *Academy of Management Journal* (18:4), pp. 784-810.
- Hong, K.-K., and Kim, Y.-G. 2002. "The Critical Success Factors for ERP Implementation: An Organizational Fit Perspective," *Information and Management* (40:1), October, pp. 25-40.



- Hooper, V.A. 2006. "The Impact of the Alignment between Information Systems and Marketing on Business Performance," in *Information Systems*, Victoria University of Wellington, Wellington, p. 434.
- Hu, Q., and Huang, C.D. 2006. "Using the Balanced Scorecard to Achieve Sustained IT-Business Alignment: A Case Study," *Communications of the Association for Information Systems* (17:Article 8), pp. 2-45.
- Huang, C.D., and Hu, Q. 2007. "Achieving IT-Business Strategic Alignment via Enterprise-Wide Implementation of Balanced Scorecards," *Information Systems Management* (24:2), pp. 173-184.
- Huang, J., and Lin, C. 2006. "Empower Internet Services in Hotel Industry - A Customer Service Life Cycle Concept," *The Journal of American Academy of Business, Cambridge* (9:1), pp. 99-103.
- Huang, L.K. 2009. "The Contingent Role of Innovation Between IT Management Sophistication and Strategic Alignment," *Journal of Global Information Management* (17:2), pp. 60-92.
- Huber, G.P., and Power, D.J. 1985. "Retrospective Reports of Strategic-Level Managers: Guidelines for Increasing Their Accuracy," *Strategic Management Journal* (6:2), pp. 171-180.
- Hufnagel, E.M., and Conca, C. 1994. "User Response Data: The Potential for Errors and Biases," *Information Systems Research* (5:1), pp. 48-73.
- Hung, R.Y.Y., Yang, B., Lien, B.Y.H., McLean, G.N., and Kuo, Y.M. 2010. "Dynamic Capability: Impact of Process Alignment and Organizational Learning Culture on Performance," *Journal of World Business* (45:3), pp. 285-294.
- Hunter, J.E., and Schmidt, F.L. 1990. *Methods of Meta-Analysis: Correcting Error and Bias in Research Findings*, Newbury Park, CA: Sage Publications.
- Hunter, J.E., and Schmidt, F.L. 2004. *Methods of Meta-Analysis: Correcting Error and Bias in Research Findings*, (2nd ed.), Newbury Park, CA: Sage Publications.
- Hunter, R., and Westerman, G. 2009. *The Real Business of IT: How CIOs Create and Communicate Value*, Boston, MA: Harvard Business Press.
- Huselid, M.A. 2011. "Celebrating 50 Years: Looking Back and Looking Forward: 50 Years of Human Resource Management," *Human Resource Management* (50:3), pp. 309-312.
- Hussin, H., King, M., and Cragg, P. 2002. "IT Alignment in Small Firms," *European Journal of Information Systems* (11:2), pp. 108-127.
- Ibarra, H. 1993. "Network Centrality, Power, and Innovation Involvement: Determinants of Technical and Administrative Roles," *Academy of Management Journal* (36:3), pp. 471-501.
- Ives, B., and Jarvenpaa, S.L. 1991. "Applications of Global Information Technology: Key Issues for Management," *MIS Quarterly* (15:1), pp. 33-49.
- Jackson, I.F. 1989. "Information Systems Planning and Alignment: A Progress Assessment," *Journal of Information Technology* (4:4), pp. 216-229.
- Jarvenpaa, S.L., and Ives, B. 1991. "Executive Involvement and Participation in the Management of Information Technology," *MIS Quarterly* (15:2), pp. 205-227.

- Jarvenpaa, S.L., and Ives, B. 1993. "Organizing for Global Competition: The Fit of Information Technology," *Decision Sciences* (24:3), pp. 547-580.
- Jasperson, J.S., Carte, T.A., Saunders, C.S., Butler, B.S., Croes, H.J.P., and Zheng, W. 2002. "Review: Power and Information Technology Research: A Metatriangulation Review," *MIS Quarterly* (26:4), December, pp. 397-459.
- Jenkin, T.A., and Chan, Y.E. 2010. "IS Project Alignment - A Process Perspective," *Journal of Information Technology* (25:1), pp. 35-55.
- Jobe, J.B. 2003. "Cognitive Psychology and Self-Reports: Models and Methods," *Quality of Life Research* (12:3), pp. 219-227.
- Johnson, A.M., and Lederer, A.L. 2005. "The Effect of Communication Frequency and Channel Richness on the Convergence Between Chief Executive and Chief Information Officers," *Journal of Management Information Systems* (22:2), pp. 227-252.
- Johnson, A.M., and Lederer, A.L. 2010. "CEO/CIO Mutual Understanding, Strategic Alignment, and the Contribution of IS to the Organization," *Information & Management* (47:3), pp. 138-149.
- Johnson, J.L., Cullen, J.B., Sakano, T., and Takenouchi, H. 1996. "Setting the Stage for Trust and Strategic Integration in Japanese-U.S. Cooperative Alliances," *Journal of International Business Studies* (27:5), pp. 981-1004.
- Johnson, M. "Alignment 2010: What's in Store for 2010 Business/IT Alignment," *CIO Magazine* Accessed: April 6, 2010, [http://www.cio.com/article/511242/Alignment\\_2010](http://www.cio.com/article/511242/Alignment_2010).
- Johnston, H.R., and Carrico, S.R. 1988. "Developing Capabilities to Use Information Strategically," *MIS Quarterly* (12:1), March, pp. 37-48.
- Johnston, K., and Yetton, P. 1996. "Integrating Information Technology Divisions in a Bank Merger: Fit, Compatibility and Models of Change," *Journal of Strategic Information Systems* (5:3), pp. 189-211.
- Jordan, E., and Tricker, B. 1995. "Information Strategy: Alignment with Organization Structure," *Journal of Strategic Information Systems* (4:4), pp. 357-382.
- Joseph, D., Ng, K., Koh, C., and Ang, S. 2007. "Turnover of Information Technology Professionals: A Narrative Review, Meta-Analytic Structural Equation Modeling, and Model Development," *MIS Quarterly* (31:3), pp. 547-577.
- Joshi, K. 1989. "The Measurement or Fairness of Equity Perceptions of Management," *MIS Quarterly* (13:3), pp. 343-359.
- Kaarst-Brown, M.L. 2005. "Understanding an Organization's View of the CIO: The Role of Assumptions about IT," *MIS Quarterly Executive* (4:2), pp. 287-301.
- Kamis, A., Koufaris, M., and Stern, T. 2008. "Using an attribute-based decision support system for user-customized products online: An experimental investigation," *MIS Quarterly* (32:1), Mar, pp. 159-177.
- Kanellis, P., Lycett, M., and Paul, R.J. 1999. "Evaluating Business Information Systems Fit: From Concept to Practical Application," *European Journal of Information Systems* (8:1), pp. 65-76.

- Kang, S., Park, J.H., and Yang, H.D. 2008. "ERP Alignment for Positive Business Performance: Evidence from Korea's ERP Market," *Journal of Computer Information Systems* (48:4), pp. 25-38.
- Kanooni, A. 2009. "Organizational Factors Affecting Business and Information Technology Alignment: A Structural Equation Modeling Analysis," in *School of Business & Technology*, Capella University, p. 172.
- Karabenick, S.A., Woolley, M.E., Friedel, J.M., Ammon, B.V., Blazeovski, J., Rhee Bonney, C., De Groot, E., Gilbert, M.C., Masu, L., Kempler, T.M., and Kelly, K.L. 2007. "Cognitive Processing of Self-Report Items in Educational Research: Do They Think What We Mean?," *Educational Psychologist* (42:3), pp. 139-151.
- Karahanna, E., and Watson, R.T. 2006. "Information Systems Leadership," *IEEE Transactions on Engineering Management* (53:2), pp. 171-176.
- Karimi, J., Bhattacharjee, A., Gupta, Y.P., and Somers, T.M. 2000. "The Effects of MIS Steering Committees on Information Technology Management Sophistication," *Journal of Management Information Systems* (17:2), pp. 207-230.
- Karimi, J., Gupta, Y.P., and Somers, T.M. 1996. "The Congruence between a Firm's Competitive Strategy and Information Technology Leader's Rank and Role," *Journal of Management Information Systems* (13:1), pp. 63-88.
- Karimi, J., and Konsynski, B.R. 1991. "Globalization and Information Management Strategies," *Journal of Management Information Systems* (7:4), pp. 7-26.
- Karimi, J., Somers, T.M., and Bhattacharjee, A. 2007. "The Role of Information Systems Resources in ERP Capability Building and Business Process Outcomes," *Journal of Management Information Systems* (24:2), pp. 221-260.
- Karimi, J., Somers, T.M., and Gupta, Y.P. 2001. "Impact of Information Technology Management Practices on Customer Service," *Journal of Management Information Systems* (17:4), pp. 125-158.
- Kearns, G.S. 2005. "An Electronic Commerce Strategic Typology: Insights from Case Studies," *Information & Management* (42:7), pp. 1023-1036.
- Kearns, G.S. 2006. "The Effect of Top Management Support of SISP on Strategic IS Management: Insights from the US Electric Power Industry," *OMEGA International Journal of Management Science* (34:3), pp. 236-253.
- Kearns, G.S., and Lederer, A.L. 2000. "The Effect of Strategic Alignment on the Use of IS-Based Resources for Competitive Advantage," *Journal of Strategic Information Systems* (9:4), pp. 265-293.
- Kearns, G.S., and Lederer, A.L. 2003. "A Resource-Based View of Strategic IT Alignment: How Knowledge Sharing Creates Competitive Advantage," *Decision Sciences* (34:1), pp. 1-29.
- Kearns, G.S., and Lederer, A.L. 2004. "The Impact of Industry Contextual Factors on IT Focus and the Use of IT for Competitive Advantage," *Information & Management* (41:7), pp. 899-919.
- Kearns, G.S., and Sabherwal, R. 2006. "Strategic alignment Between Business and Information Technology: A Knowledge-Based View of Behaviors, Outcome, and Consequences," *Journal of Management Information Systems* (23:3), pp. 129-162.

- Kearns, G.S., and Sabherwal, R. 2007. "Antecedents and Consequences of Information Systems Planning Integration," *IEEE Transactions on Engineering Management* (54:4), pp. 628-643.
- Kempaiah, R.M. 2008. "Analysis of Performance Impact and Benchmarking Strategic Alignment Maturity in Indian IT Service Industry," Stevens Institute of Technology, Hoboken, NJ, p. 151.
- 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," in *School of Business and Technology*, Capella University, p. 116.
- Khaiata, M., and Zualkernan, I.A. 2009. "A Simple Instrument to Measure IT-Business Alignment Maturity," *Information Systems Management* (26:2), pp. 138-152.
- King, W.R. 1978. "Strategic Planning for Management Information Systems," *MIS Quarterly* (2:1), pp. 27-37.
- King, W.R. 2008. "Including the CIO in Top Management," *Information Systems Management* (25:2), pp. 188-189.
- King, W.R., and Teo, T.S.H. 1997. "Integration between Business Planning and Information Systems Planning: Validating a Stage Hypothesis," *Decision Sciences* (28:2), pp. 279-308.
- Kishore, R., and McLean, E.R. 2007. "Reconceptualizing Innovation Compatibility as Organizational Alignment in Secondary IT Adoption Contexts: An Investigation of Software Reuse Infusion," *IEEE Transactions on Engineering Management* (54:4), pp. 756-775.
- Kock, N., Lynn, G.S., Dow, K.E., and Akgun, A.E. 2006. "Team Adaptation to Electronic Communication Media: Evidence of Compensatory Adaptation in New Product Development Teams," *European Journal of Information Systems* (15:3), pp. 331-341.
- Kohli, R., and Devaraj, S. 2003. "Measuring Information Technology Payoff: A Meta-Analysis of Structured Variables in Firm-Level Empirical Research," *Information Systems Research* (14:2), June, pp. 127-145.
- Kolodinsky, R.W., Treadway, D.C., and Ferris, G.R. 2007. "Political Skill and Influence Effectiveness: Testing Portions of an Expanded Ferris and Judge (1991) Model," *Human Relations* (60:12), pp. 1747-1777.
- Kunnathur, A.S., and Shi, Z. 2001. "An Investigation of the Strategic Information Systems Planning Success in Chinese Publicly Traded Firms," *International Journal of Information Management* (21:6), pp. 423-439.
- Lacity, M.C., and Hirschheim, R. 1995. "Benchmarking as a Strategy for Managing Conflicting Stakeholder Perceptions of Information Systems," *Journal of Strategic Information Systems* (4:2), pp. 165-185.
- Lai, J.M., Lee, G.G., and Hsu, W.L. 2009. "The Influence of Partner's Trust-Commitment Relationship on Electronic Commerce Strategic Planning," *Management Decision* (47:3), pp. 491-507.
- Lambert, R.A., Larcker, D.F., and Weigelt, K. 1993. "The Structure of Organizational Incentives," *Administrative Science Quarterly* (38), pp. 438-461.

- Law, C.C.H., and Ngai, E.W.T. 2007. "IT Infrastructure Capabilities and Business Process Improvements: Association with IT Governance Characteristics," *Information Resources Management Journal* (20:4), pp. 25-47.
- Lawrence, P.R., and Lorsch, J.W. 1967. *Organization and Environment: Managing Differentiation and Integration*, Boston: Harvard Business School Press.
- LEADTOOLS. 2006. "SPSS 15.0 for Windows Graduate Student Version," SPSS Inc.
- Lederer, A.L., and Mendelow, A.L. 1987. "Information Resource Planning: Overcoming Difficulties in Identifying Top Management's Objectives," *MIS Quarterly* (11:3), pp. 389-399.
- Lederer, A.L., and Mendelow, A.L. 1988. "Convincing Top Management of the Strategic Potential of Information Systems," *MIS Quarterly* (12:4), pp. 525-534.
- Lederer, A.L., and Mendelow, A.L. 1989. "Coordination of Information Systems Plans with Business Plans," *Journal of Management Information Systems* (6:2), pp. 5-19.
- Lederer, A.L., and Salmela, H. 1996. "Toward a Theory of Strategic Information Systems Planning," *Journal of Strategic Information Systems* (5:3), pp. 237-253.
- Lee, G., and Xia, W. 2006. "Organizational Size and IT Innovation Adoption: A Meta-Analysis," *Information and Management* (43), pp. 975-985.
- Lee, H., Yu, J., and Kim, H. 2004. "An Empirical Study on the Integrated Performance Model for the Effect of Information Technology Investment," in *Pacific Asia Conference on Information Systems (PACIS)*, pp. 391-402.
- Lee, L.S., and Anderson, R.M. 2007. "IT Project Manager Characteristics: A Resource-Based View," 2nd International Research Workshop on Information Technology Project Management (IRWITPM), Montreal, Quebec, Canada, pp. 56-66.
- Lee, S. 1991. "The Impact of Office Information Systems on Potential Power and Influence," *Journal of Management Information Systems* (8:2), pp. 135-151.
- Lee, S., and Leifer, R.P. 1992. "A Framework for Linking the Structure of Information Systems with Organizational Requirements for Information Sharing," *Journal of Management Information Systems* (8:4), Spring, pp. 27-44.
- Lee, S.M., Kim, K., Paulson, P., and Park, H. 2008. "Developing a Socio-Technical Framework for Business-IT Alignment," *Industrial Management & Data Systems* (108:9), pp. 1167-1181.
- Lerouge, C., Newton, S., and Blanton, J.E. 2005. "Exploring the Systems Analyst Skill Set: Perceptions, Preferences, Age, and Gender," *Journal of Computer Information Systems* (45:3), pp. 12-23.
- Levy, M., Powell, P., and Yetton, P. 2001. "SMEs: Aligning IS and the Strategic Context," *Journal of Information Technology* (16:3), pp. 133-144.
- Lewis, B.R., Snyder, C.A., and Rainer Jr., R.K. 1995. "An Empirical Assessment of the Information Resource Management Construct," *Journal of Management Information Systems* (12:1), pp. 199-223.
- Lewis, B.R., Templeton, G.F., and Byrd, T.A. 2005. "A Methodology for Construct Development in MIS Research," *European Journal of Information Systems* (14:4), pp. 388-400.

- Li, D., Ji, S., and Li, W. 2006a. "Information Management Environment, Business Strategy, and the Effectiveness of Information Systems Strategic Planning," in *Pacific Asia Conference on Information Systems*, pp. 531-547.
- Li, Y., Tan, C.H., Teo, H.H., and Tan, B.C.Y. 2006b. "Innovative Usage of Information Technology in Singapore Organizations: Do CIO Characteristics Make a Difference?," *IEEE Transactions on Engineering Management* (53:2), pp. 177-190.
- Lindell, M., and Whitney, D. 2001. "Accounting for Common Method Variance in Cross-Sectional Research Designs," *Journal of Applied Psychology* (86:1), pp. 114-121.
- Lines, R. 2007. "Using Power to Install Strategy: The Relationships between Expert Power, Position Power, Influence Tactics and Implementation Success," *Journal of Change Management* (7:2), pp. 143-170.
- Ling, H., Zhao, F., and Wang, Y. 2009. "Impact of Synergy between IT and Business Process on Organizational Performance: A Perspective of Ambidexterity Theory," in *Pacific Asia Conference on Information Systems*, pp. 1-13.
- Lipsey, M.W., and Wilson, D.B. 2001. *Practical Meta-Analysis*, Thousand Oaks, CA: Sage Publications.
- Little, T.D., Lindenberger, U., and Nesselroade, J.R. 1999. "On Selecting Indicators for Multivariate Measurement and Modeling With Latent Variables: When "Good" Indicators are Bad and "Bad" Indicators Are Good," *Psychological Methods* (4:2), pp. 192-211.
- Luftman, J. 2000. "Assessing Business-IT Alignment Maturity," *Communications of the Association for Information Systems* (4:Article 14), pp. 1-50.
- Luftman, J. 2003. "Assessing IT/Business Alignment," *Information Systems Management* (20:4), pp. 9-15.
- Luftman, J., and Ben-Zvi, T. 2010. "Key Issues for IT Executives 2009: Difficult Economy's Impact on IT," *MIS Quarterly Executive* (9:1), pp. 49-59.
- Luftman, J., and Brier, T. 1999. "Achieving and Sustaining Business-IT Alignment," *California Management Review* (42:1), pp. 109-122.
- Luftman, J., Dorociak, J., Kempaiah, R., and Rigoni, E.H. 2008. "Strategic Alignment Maturity: A Structural Equation Model Validation," in *Americas Conference on Information Systems (AMCIS)*, Toronto, ON Canada, pp. 1-16.
- Luftman, J., and Kempaiah, R. 2008. "Key Issues for IT Executives 2007," *MIS Quarterly Executive* (7:2), pp. 99-112.
- Luftman, J., Kempaiah, R., and Rigoni, E.H. 2009. "Key Issues for IT Executives 2008," *MIS Quarterly Executive* (8:3), pp. 151-159.
- Luftman, J., Lewis, P.R., and Oldach, S.H. 1993. "Transforming the Enterprise: The Alignment of Business and Information Technology Strategies," *IBM Systems Journal* (32:1), pp. 198-221.
- Luftman, J., and McLean, E. 2004. "Key Issues for IT Executives," *MIS Quarterly Executive* (3:2), pp. 89-104.

- Luftman, J., Papp, R., and Brier, T. 1999. "Enablers and Inhibitors of Business-IT Alignment," *Communications of the Association for Information Systems* (1), pp. 1-33.
- MacCallum, R.C., Zhang, S., Preacher, K.J., and Rucker, D.D. 2002. "On the Practice of Dichotomization of Quantitative Variables," *Psychological Methods* (7:1), pp. 19-40.
- MacKenzie, S.B., Podsakoff, P.M., and Podsakoff, N.P. 2011. "Construct Measurement and Validation Procedures in MIS and Behavioral Research: Integrating New and Existing Techniques," *MIS Quarterly* (35:2), pp. 293-334.
- Madapusi, A., and D'Souza, D. 2005. "Aligning ERP Systems with International Strategies," *Information Systems Management* (22:1), pp. 7-17.
- Main, T.J., and Short, J.E. 1989. "Managing the Merger: Building Partnership through IT Planning at the New Baxter," *MIS Quarterly* (13:4), pp. 468-484.
- Malhotra, N.K., Kim, S.S., and Patil, A. 2006. "Common Method Variance in IS Research: A Comparison of Alternative Approaches and a Reanalysis of Past Research," *Management Science* (52:12), pp. 1865-1883.
- Mangini, J. 2011. "Please Share Your Opinion: What Do You Feel is the #1 Challenge or Threat to IT Today?," M. Jennings (ed.), LinkedIn: CIO Network.
- March, J.G. 1962. "The Business Firm as a Political Coalition," *The Journal of Politics* (24:4), pp. 662-678.
- Mardia, K.V. 1970. "Measures of Multivariate Skewness and Kurtosis with Applications," *British Journal of Mathematical and Statistical Psychology* (28), pp. 205-214.
- Markham, S.K. 1998. "A Longitudinal Examination of How Champions Influence Others to Support Their Projects," *Journal of Production Innovation Management* (15:6), pp. 490-504.
- Marsden, P.V. 1990. "Network Data and Measurement," *Annual Review of Sociology* (16:1), pp. 435-463.
- Mata, F.J., Fuerst, W.L., and Barney, J.B. 1995. "Information Technology and Sustained Competitive Advantage: A Resource-Based Analysis," *MIS Quarterly* (1995:December), pp. 487-505.
- Maxwell, S.E. 2000. "Sample Size and Multiple Regression Analysis," *Psychological Methods* (5), pp. 434-458.
- McAfee, A. 2002. "The Impact of Enterprise Information Technology Adoption on Operational Performance: An Empirical Investigation," *Production and Operations Management* (11:1), Spring, pp. 33 -53.
- McKendrick, J. 2011. "Finance Executives, Not CIOs, Have Final Word on IT: Gartner Survey," <http://www.zdnet.com/blog/service-oriented/finance-executives-not-cios-have-final-word-on-it-gartner-survey/7338>.
- McKnight, D.H., Choudhury, V., and Kacmar, C. 2002. "Developing and Validating Trust Measures for e-Commerce: An Integrative Typology," *Information Systems Research* (13:3), September, pp. 334-359.

- McMurtrey, M.E., Grover, V., Teng, J.T.C., and Lightner, N.J. 2002. "Job Satisfaction of Information Technology Workers: The Impact of Career Orientation and Task Automation in a CASE Environment," *Journal of Management Information Systems* (19:2), pp. 273-302.
- McNulty, T., Pettigrew, A., Jobome, G., and Morris, C. 2011. "The Role, Power, and Influence of Company Chairs," *Journal of Management and Governance* (15:1), pp. 91-121.
- Medcof, J.W. 2007. "CTO Power: A Chief Technology Officer's Influence Depends on How Effectively He or She Carries Out Three Leadership Roles," *Research Technology Management* (50:4), pp. 23-31.
- Medcof, J.W. 2008. "The Organizational Influence of the Chief Technology Officer," *R&D Management* (38:4), pp. 406-420.
- Mehra, A., Dixon, A.L., Brass, D.J., and Robertson, B. 2006. "The Social Network Ties of Group Leaders: Implications for Group Performance and Leader Reputation," *Organization Science* (17:1), pp. 64-79.
- Mehta, M., and Hirschheim, R. 2007. "Strategic Alignment in Mergers and Acquisitions: Theorizing IS Integration Decision Making," *Journal of the Association for Information Systems* (8:3), pp. 143-174.
- Miles, R.E., and Snow, C.C. 1978. *Organizational Strategy, Structure, and Process*, New York: McGraw-Hill.
- Miller, J. 1993. "Measuring and Aligning Information Systems with the Organization," *Information & Management* (25:4), pp. 217-228.
- Mintzberg, H. 1983. *Power in and around Organizations*, Englewood Cliffs, NJ: Prentice Hall.
- Mohdzain, M.B., and Ward, J.M. 2007. "A Study of Subsidiaries' Views of Information Systems Planning in Multinational Organisations," *Journal of Strategic Information Systems* (16:4), pp. 324-352.
- Moody, K.W. 2003. "New Meaning to IT Alignment," *Information Systems Management* (20:4), pp. 30-35.
- Moore, G.C., and Benbasat, I. 1991. "Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation," *Information Systems Research* (2:3), September, pp. 192-222.
- Morris, R.F. 2006. "The Effects of Key Moderators on the Relationship between Firm-Wide IT Capability and Firm Performance: An Empirical Investigation of an Integrative Model of IT Business Value," in *Management*, Auburn University, p. 214.
- Nadler, D., and Tushman, M. 1983. "A General Diagnostic Model for Organizational Behavior: Applying a Congruence Perspective," in *Perspectives on Behavior in Organizations*, J.R. Hackman, E.E. Lawler and L.W. Porter (eds.), New York: McGraw-Hill, pp. 112-124.
- Nahapiet, J., and Ghoshal, S. 1998. "Social Capital, Intellectual Capital, and the Organizational Advantage," *Academy of Management Review* (23:2), pp. 242-266.



- Nash, E.M. 2006. "Assessing IT as a Driver or Enabler of Transformation in the Pharmaceutical Industry Employing the Strategic Alignment Maturity Model," Stevens Institute of Technology, Hoboken, p. 253.
- Newkirk, H.E., and Lederer, A.L. 2006a. "The Effectiveness of Strategic Information Systems Planning under Environmental Uncertainty," *Information & Management* (43:4), pp. 481-501.
- Newkirk, H.E., and Lederer, A.L. 2006b. "Incremental and Comprehensive Strategic Information Systems Planning in an Uncertain Environment," *IEEE Transactions on Engineering Management* (53:3), pp. 380-394.
- Newkirk, H.E., Lederer, A.L., and Johnson, A.M. 2008. "Rapid Business and IT Change: Drivers for Strategic Information Systems Planning?," *European Journal of Information Systems* (17:3), pp. 198-218.
- Newkirk, H.E., Lederer, A.L., and Srinivasan, C. 2003. "Strategic Information Systems Planning: Too Little or Too Much?," *Journal of Strategic Information Systems* (12:3), pp. 201-228.
- Niederman, F., Brancheau, J.C., and Wetherbe, J.C. 1991. "Information Systems Issues for the 1990s," *MIS Quarterly* (15:4), pp. 475-500.
- Noar, S.M. 2003. "The Role of Structural Equation Modeling in Scale Development," *Structural Equation Modeling* (10:4), pp. 622-647.
- Nunnally, J.C. 1967. *Psychometric Theory*, New York: McGraw Hill.
- Nunnally, J.C. 1978. *Psychometric Theory*, (2nd ed.), New York, NY: McGraw-Hill.
- Nunnally, J.C., and Bernstein, I.H. 1994. *Psychometric Theory*, (3rd ed.), New York, New York, U.S.A.: McGraw-Hill, Inc.
- Oh, W., and Pinsonneault, A. 2007. "On the Assessment of the Strategic Value of Information Technologies: Conceptual and Analytical Approaches," *MIS Quarterly* (31:2), pp. 239-265.
- Palmer, J.W., and Markus, M.L. 2000. "The Performance Impacts of Quick Response and Strategic Alignment in Specialty Retailing," *Information Systems Research* (11:3), pp. 241-259.
- Papp, R. 1999. "Business-IT Alignment: Productivity Paradox Payoff?," *Industrial Management & Data Systems* (99:8), pp. 367-373.
- Peak, D., and Guynes, C.S. 2003. "Improving Information Quality through IT Alignment Planning: A Case Study," *Information Systems Management* (20:4), pp. 22-29.
- Peak, D., Guynes, C.S., and Kroon, V. 2005. "Information Technology Alignment Planning - A Case Study," *Information & Management* (42:5), pp. 635-649.
- Peng, M.W., and Luo, Y. 2000. "Managerial Ties and Firm Performance in a Transition Economy: The Nature of a Micro-Macro Link," *Academy of Management Journal* (43:3), pp. 486-501.
- Peppard, J. 2010. "Unlocking the Performance of the Chief Information Officer (CIO)," *California Management Review* (52:4), pp. 73-99.
- Peppard, J., and Ward, J. 2004. "Beyond Strategic Information Systems: Towards and IS Capability," *Journal of Strategic Information Systems* (13:2), pp. 167-194.
- Perrewe, P.L., and Nelson, D.L. 2004. "Gender and Career Success: The Facilitative Role of Political Skill," *Organizational Dynamics* (33:4), pp. 366-378.

- Pettigrew, A.M. 1973. *The Politics of Organizational Decision-Making*, London: Tavistock.
- Pfeffer, J. 1981. *Power in Organizations*, Marshfield, MA: Pitman Publishing Inc.
- Pfeffer, J., and Salancik, G.R. 1974. "Organizational Decision-Making as a Political Process: The Case of a University Budget," *Administrative Science Quarterly* (19:2), pp. 135-151.
- Pfeffer, J., and Salancik, G.R. 1978. *The External Control of Organizations: A Resource Dependence Perspective*, New York City, New York, U.S.A.: Harper & Row.
- Piccolo, R.F., and Colquitt, J.A. 2006. "Transformational Leadership and Job Behaviors: The Mediating Role of Core Job Characteristics," *Academy of Management Journal* (49:2), pp. 327-340.
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.-Y., and Podsakoff, N.P. 2003. "Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies," *Journal of Applied Psychology* (88:5), pp. 879-903.
- Porra, J., Hirschheim, R., and Parks, M.S. 2005. "The History of Texaco's Corporate Information Technology Function: A General Systems Theoretical Interpretation," *MIS Quarterly* (29:4), pp. 721-746.
- Porter, C.E., and Donthu, N. 2008. "Cultivating Trust and Harvesting Value in Virtual Communities," *Management Science* (54:1), pp. 113-128.
- Porter, M.E. 1980. *Competitive Strategy*, New York City, New York, U.S.A.: Free Press.
- Porter, M.E. 1985. *Competitive Advantage*, New York City, New York, U.S.A.: Free Press.
- Porter, M.E., and Millar, V.E. 1985. "How Information Gives You Competitive Advantage," *Harvard Business Review* (63:4), July/August, pp. 149-160.
- Posey, C., Lowry, P.B., Roberts, T.L., and Ellis, T.S. 2010. "Proposing the online community self-disclosure model: the case of working professionals in France and the U.K. who use online communities," *European Journal of Information Systems* (19:2), pp. 181-195.
- Powell, T.C. 1992. "Organizational Alignment as Competitive Advantage," *Strategic Management Journal* (13:2), pp. 119-134.
- Premkumar, G., and King, W.R. 1992. "An Empirical Assessment of Information Systems Planning and the Role of Information Systems in Organizations," *Journal of Management Information Systems* (9:2), pp. 99-125.
- Preston, D.S., Chen, D., and Leidner, D.E. 2008. "Examining the Antecedents and Consequences of CIO Strategic Decision-Making Authority: An Empirical Study," *Decision Sciences* (39:4), pp. 605-642.
- Preston, D.S., and Karahanna, E. 2009. "Antecedents of IS Strategic Alignment: A Nomological Network," *Information Systems Research* (20:2), pp. 159-179.
- Preston, D.S., Karahanna, E., and Rowe, F. 2006. "Development of Shared Understanding between the Chief Information Officer and Top Management Team in U.S. and French Organizations: A Cross-Cultural Comparison," *IEEE Transactions on Engineering Management* (53:2), pp. 191-206.
- Pyburn, P.J. 1983. "Linking the MIS Plan with Corporate Strategy: An Exploratory Study," *MIS Quarterly* (7:2), pp. 1-14.

- Raghunathan, B., and Raghunathan, T.S. 1989. "Relationship of the Rank of Information Systems Executive to the Organizational Role and Planning Dimensions of Information Systems," *Journal of Management Information Systems* (6:1), pp. 111-126.
- Raghunathan, T.S. 1992. "Impact of the CEO's Participation on Information Systems Steering Committees," *Journal of Management Information Systems* (8:4), pp. 83-96.
- Ragu-Nathan, B., Ragu-Nathan, T.S., Tu, Q., and Shi, Z. 2001. "Information Management (IM) Strategy: The Construct and Its Measurement," *Journal of Strategic Information Systems* (10:4), pp. 265-289.
- Randolph, W.A., Sapienza, H.J., and Watson, M.A. 1991. "Technology-Structure Fit and Performance in Small Businesses: An Examination of the Moderating Effects of Organizational States," *Entrepreneurship Theory & Practice* (16:1), pp. 27-41.
- Ravishankar, M.N., Pan, S.L., and Leidner, D.E. 2011. "Examining the Strategic Alignment and Implementation Success of a KMS: A Subculture-Based Multilevel Analysis," *Information Systems Research* (22:1), pp. 39-59.
- Ravishankar, M.N., Pan, S.L., and Leidner, D.E. in press. "Examining the Strategic Alignment and Implementation Success of a KMS: A Subculture-Based Multilevel Analysis," *Information Systems Research*, pp. 1-23.
- Raymond, L., and Bergeron, F. 2008. "Enabling the Business Strategy of SMEs Through e-Business Capabilities: A Strategic Alignment Perspective," *Industrial Management & Data Systems* (108:5), pp. 577-595.
- Raymond, L., and Croteau, A.M. 2006. "Enabling the Strategic Development of SMEs through Advanced Manufacturing Systems: A Configurational Perspective," *Industrial Management & Data Systems* (106:7), pp. 1012-1032.
- Raymond, L., Pare, G., and Bergeron, F. 1995. "Matching Information Technology and Organizational Structure: An Empirical Study with Implications for Performance," *European Journal of Information Systems* (4:1), pp. 3-16.
- Reich, B.H., and Benbasat, I. 1996. "Measuring the Linkage Between Business and Information Technology Objectives," *MIS Quarterly* (20:1), pp. 55-81.
- Reich, B.H., and Benbasat, I. 2000. "Factors that Influence the Social Dimension of Alignment Between Business and Information Technology Objectives," *MIS Quarterly* (24:1), pp. 81-113.
- Ringle, C.M., Wende, S., and Will, A. 2005. "SmartPLS 2.0 (beta)," SmartPLS, Hamburg, Germany.
- Rivard, S., Raymond, L., and Verreault, D. 2006. "Resource-Based View and Competitive Strategy: An Integrated Model of the Contribution of Information Technology to Firm Performance," *Journal of Strategic Information Systems* (15:1), pp. 29-50.
- Robbins, S.S., and Stylianou, A.C. 1999. "Post-merger Systems Integration: The Impact on IS Capabilities," *Information and Management* (36), pp. 205-212.
- Rockart, J.F., Ball, L., and Bullen, C.V. 1982. "Future Role of the Information Systems Executive," *MIS Quarterly* (6:4), pp. 1-14.

- Roepke, R., Agarwal, R., and Ferratt, T.W. 2000. "Aligning the IT Human Resource with Business Vision: The Leadership Initiative at 3M," *MIS Quarterly* (24:2), pp. 327-353.
- Rosenthal, R. 1979. "The "File Drawer Problem" and Tolerance for Null Results," *Psychological Bulletin* (86:3), pp. 638-641.
- Roth, P.L., Huffcutt, A.I., and Bobko, P. 2003. "Ethnic Group Differences in Measures of Job Performance: A New Meta-Analysis," *Journal of Applied Psychology* (88:4), pp. 694-706.
- Saaksjarvi, M. 2000. "The Roles of Corporate IT Infrastructure and Their Impact on IS Effectiveness," in *European Conference on Information Systems*, pp. 3-10.
- Sabherwal, R., and Chan, Y.E. 2001. "Alignment between Business and IS Strategies: A Study of Prospectors, Analyzers, and Defenders," *Information Systems Research* (12:1), pp. 11-33.
- Sabherwal, R., Hirschheim, R., and Goles, T. 2001. "The Dynamics of Alignment: Insights from a Punctuated Equilibrium Model," *Organization Science* (12:2), pp. 179-197.
- Sabherwal, R., and Kirs, P. 1994. "The Alignment between Organizational Critical Success Factors and Information Technology Capability in Academic Institutions," *Decision Sciences* (25:2), March/April, pp. 301-330.
- Salancik, G.R., and Pfeffer, J. 1974. "The Bases and Use of Power in Organizational Decision Making: The Case of a University Budget," *Administrative Science Quarterly* (19:4), pp. 453-473.
- Sanchez Ortiz, A. 2003. "Testing a Model of the Relationships Among Organizational Performance, IT-Business Alignment, and IT Governance," University of North Texas, p. 212.
- Schmidt, F.L., and Le, H. 2005. *Software for the Hunter-Schmidt Meta-Analysis Methods*, Iowa City, 42242: University of Iowa, Department of Management & Organization.
- Schniederjans, M., and Cao, Q. 2009. "Alignment of Operations Strategy, Information Strategic Orientation, and Performance: An Empirical Study," *International Journal of Production Research* (47:10), pp. 2535-2563.
- Schwarz, A., Kalika, M., Kefi, H., and Schwarz, C. 2010. "A Dynamic Capabilities Approach to Understanding the Impact of IT-Enabled Businesses Processes and IT-Business Alignment on the Strategic and Operational Performance of the Firm," *Communications of the Association for Information Systems* (26:Article 4), pp. 57-84.
- Schwarz, N., Grayson, C.E., and Knauper, B. 1998. "Formal Features of Rating Scales and the Interpretation of Question Meaning," *International Journal of Public Opinion Research* (10:2), pp. 177-183.
- Scott, G.M. 2005. "Still Not Solved: The Persistent Problem of IT Strategic Planning," *Communications of the Association for Information Systems* (16:Article 47), pp. 904-936.

- Segars, A.H., and Grover, V. 1998. "Strategic Information Systems Planning Success: An Investigation of the Construct and its Measurement," *MIS Quarterly* (22:2), pp. 139-163.
- Sharma, R., and Yetton, P. 2003. "The Contingent Effects of Management Support and Task Interdependence on Successful Information Systems Implementation," *MIS Quarterly* (27:4), pp. 533-555.
- Shpilberg, D., Berez, S., Puryear, R., and Shah, S. 2007. "Avoiding the Alignment Trap in IT," *MIT Sloan Management Review* (49:1), pp. 51-58.
- Smaczny, T. 2001. "Is an Alignment Between Business and IT the Appropriate Paradigm to Manage IT in Today's Organisation?," *Management Decision* (39:10), pp. 797-802.
- Smaltz, D.H., Sambamurthy, V., and Agarwal, R. 2006. "The Antecedents of CIO Role Effectiveness in Organizations: An Empirical Study in the Healthcare Sector," *IEEE Transactions on Engineering Management* (53:2), pp. 207-222.
- Smits, M.T., van der Poel, K.G., and Ribbers, P.M.A. 1997. "Assessment of Information Strategies in Insurance Companies in the Netherlands," *Journal of Strategic Information Systems* (6:2), pp. 129-148.
- Sobel, M.D. 1982. "Asymptotic confidence intervals for indirect effects in structural equation models," in *American Sociological Association*, S. Leinhardt (ed.), Washington, D.C., pp. 290-312.
- Stahl, G.K., and Voigt, A. 2008. "Do Cultural Differences Matter in Mergers and Acquisitions? A Tentative Model and Examination," *Organization Science* (19:1), pp. 160-176.
- Stam, W., and Elfring, T. 2008. "Entrepreneurial Orientation and New Venture Performance: The Moderating Role of Intra- and Extraindustry Social Capital," *Academy of Management Journal* (51:1), pp. 97-111.
- Stephens, C.S., Ledbetter, W.N., Mitra, A., and Ford, F.N. 1992. "Executive or Functional Manager? The Nature of the CIO's Job," *MIS Quarterly* (16:4), pp. 449-467.
- Stewart, W.H., and Roth, P.L. 2001. "Risk Propensity Differences between Entrepreneurs and Managers: A Meta-Analytic Review," *Journal of Applied Psychology* (86:1), pp. 145-153.
- Stoel, M.D. 2006. "The Antecedents and Consequences of Shared Business-IT Understanding: An Empirical Investigation," in *Accounting and Management Information Systems*, The Ohio State University, p. 165.
- Straub, D.W. 1989. "Validating Instruments in MIS Research," *MIS Quarterly* (13:2), June, pp. 147-169.
- Sun, H. forthcoming. "Understanding User Revisions When Using Information Systems Features: Adaptive System Use and Triggers," *MIS Quarterly*.
- Swanson, E.B. 1994. "Information Systems Innovation Among Organizations," *Management Science* (40:9), September, pp. 1069-1092.
- Switzer, F.S., Paese, P.W., and Drasgow, F. 1992. "Bootstrap Estimates of Standard Errors in Validity Generalization," *Journal of Applied Psychology* (77:2), pp. 123-129.

- Synnott, W.R., and Gruber, W.H. 1981. *Information Resource Management: Opportunities and Strategies for the 1980s*, New York, NY: John Wiley & Sons, Inc.
- Tabachnick, B.G., and Fidell, L.S. 2007. *Using Multivariate Statistics*, (5th ed.), Boston, MA: Pearson.
- Taipala, D.J. 2008. "Information Technology Outsourcing: A Study of Its Role in Strategic Alignment and the Mitigating Effect of Virtual Organization," Capella University, p. 195.
- Tallon, P.P. 2000. "A Process-Oriented Assessment of the Alignment of Information Systems and Business Strategy: Implications for IT Business Value," in *Management*, University of California, Irvine, p. 196.
- Tallon, P.P. 2003. "The Alignment Paradox," *CIO Insight* (1:47), <http://www.cioinsight.com/c/a/Past-News/Paul-Tallon-The-Alignment-Paradox/>.
- Tallon, P.P. 2007a. "Does IT Pay to Focus? An Analysis of IT Business Value under Single and Multi-Focused Business Strategies," *Journal of Strategic Information Systems* (16:3), pp. 278-300.
- Tallon, P.P. 2007b. "A Process-Oriented Perspective on the Alignment of Information Technology and Business Strategy," *Journal of Management Information Systems* (24:3), pp. 227-268.
- Tallon, P.P., and Kraemer, K.L. 2003. "Investigating the Relationship between Strategic Alignment and IT Business Value: The Discovery of a Paradox," in *Creating Business Value with Information Technology : Challenges and Solutions*, S. Namchul (ed.), Hershey, PA: Idea Group Publishing, pp. 1-22.
- Tallon, P.P., and Kraemer, K.L. 2006. "The Development and Application of a Process-Oriented "Thermometer" of IT Business Value," *Communications of the Association for Information Systems* (17:Article 45), pp. 995-1027.
- Tallon, P.P., Kraemer, K.L., and Gurbaxani, V. 2000. "Executives' Perceptions of the Business Value of Information Technology: A Process-Oriented Approach," *Journal of Management Information Systems* (16:4), pp. 145-173.
- Tan, F.B. 1995. "The Responsiveness of Information Technology to Business Strategy Formulation: An Empirical Study," *Journal of Information Technology* (10:3), pp. 171-178.
- Tan, F.B., and Gallupe, R.B. 2006. "Aligning Business and Information Systems Thinking: A Cognitive Approach," *IEEE Transactions on Engineering Management* (53:2), pp. 223-237.
- Tarafdar, M., and Gordon, S.R. 2007. "Understanding the Influence of Information Systems Competencies on Process Innovation: A Resource-Based View," *Journal of Strategic Information Systems* (16:4), pp. 353-392.
- Tarafdar, M., and Qrunfleh, S. 2009. "IT-Business Alignment: A Two-Level Analysis," *Information Systems Management* (26:4), pp. 338-349.
- Tavakolian, H. 1989. "Linking the Information Technology Structure With Organizational Competitive Strategy: A Survey," *MIS Quarterly* (1989:September), pp. 309-317.

- Teo, H.H., Wei, K.K., and Benbasat, I. 2003. "Predicting Intention to Adopt Interorganizational Linkages: An Institutional Perspective," *MIS Quarterly* (27:1), March, pp. 19-50.
- Teo, T.S.H., and Ang, J.S.K. 1999. "Critical Success Factors in the Alignment of IS Plans with Business Plans," *International Journal of Information Management* (19:2), pp. 173-185.
- Teo, T.S.H., and King, W.R. 1996. "Assessing the Impact of Integrating Business Planning and IS Planning," *Information & Management* (30:6), pp. 309-321.
- Teo, T.S.H., and King, W.R. 1997. "Integration Between Business Planning and Information Systems Planning: An Evolutionary-Contingency Perspective," *Journal of Management Information Systems* (14:1), pp. 185-214.
- Teo, T.S.H., and King, W.R. 1999. "An Empirical Study of the Impacts of Integrating Business Planning and Information Systems Planning," *European Journal of Information Systems* (8:3), pp. 200-210.
- Thrasher, E.H., Byrd, T.A., and Hall, D. 2006. "Information Systems and Healthcare XV: Strategic Fit in Healthcare Integrated Delivery Systems: An Empirical Investigation," *Communications of the Association for Information Systems* (18:Article 34), pp. 692-709.
- Tiwana, A., and Konsynski, B. 2010. "Complementarities between Organizational IT Architecture and Governance Structure," *Information Systems Research* (21:2), pp. 288-304.
- Treadway, D.C., Breland, J.W., Williams, L.A., Wang, L., and Yang, J. 2008. "The Role of Politics and Political Behavior in the Development and Performance of LMX Relationships," in *Knowledge-Driven Corporation—Complex Creative Destruction*, G.B. Graen and J.A. Graen (eds.): Information Age Publishing.
- Treadway, D.C., Ferris, G.R., Duke, A.B., Adams, G.L., and Thatcher, J.B. 2007. "The Moderating Role of Subordinate Political Skill on Supervisors' Impressions of Subordinate Ingratiation and Ratings of Subordinate Interpersonal Facilitation," *Journal of Applied Psychology* (92:3), pp. 848-855.
- Van de Ven, A.H. 2005. "Running in Packs to Develop Knowledge-Intensive Technologies," *MIS Quarterly* (29:2), pp. 365-378.
- van der Zee, J.T.M., and de Jong, B. 1999. "Alignment is Not Enough: Integrating Business and Information Technology Management with the Balanced Business Scorecard," *Journal of Management Information Systems* (16:2), pp. 137-156.
- Van Geel, B. 2011. "Who's to Blame for Troubled Projects..., Revisted: What is the Role of the Architect in Failing Projects?," M. Jennings (ed.), LinkedIn: CIO Network.
- VanderWerf, P.A., and Mahon, J.F. 1997. "Meta-Analysis of the Impact of Research Methods on Findings of First-Mover Advantage," *Management Science* (43:11), pp. 1510-1519.
- Velcu, O. 2007. "Exploring the Effects of ERP Systems on Organizational Performance: Evidence from Finnish Companies," *Industrial Management & Data Systems* (107:9), pp. 1316-1334.
- Venkatraman, N. 1985. "Strategic Orientation of Business Enterprises: The Construct and Its Measurement," University of Pittsburgh, Pittsburgh, PA.

- Venkatraman, N.V. 1989. "The Concept of Fit in Strategy Research: Toward Verbal and Statistical Correspondence," *Academy of Management Review* (14:3), July, pp. 423-444.
- Wade, D. 2011. "How Do We Benchmark the IT Development Team Against a Common External Benchmark?," M. Jennings (ed.), LinkedIn: CIO Network.
- Wakefield, K. 2005. "Identifying Knowledge Agents in a KM Strategy: The Use of the Structural Influence Index," *Information & Management* (42:7), pp. 935-945.
- Wang, E.T.G., and Tai, J.C.F. 2003. "Factors Affecting Information Systems Planning Effectiveness: Organizational Contexts and Planning Systems Dimensions," *Information & Management* (40:4), pp. 287-303.
- Wasko, M.M., and Faraj, S. 2005. "Why Should I Share? Examining Social Capital and Knowledge Contribution in Electronic Networks or Practice," *MIS Quarterly* (29:1), pp. 35-57.
- Webster, J., and Watson, R.T. 2002. "Analyzing the Past to Prepare for the Future: Writing a Literature Review," *MIS Quarterly* (26:2), pp. xiii-xxiii.
- Weill, P., and Broadbent, M. 1998. *Leveraging the New Infrastructure: How Market Leaders Capitalize on Information Technology*, Cambridge, Massachusetts, U.S.A.: Harvard Business School Press.
- Weill, P., and Ross, J.W. 2005. "A Matrixed Approach to Designing IT Governance," *Sloan Management Review* (46:2), pp. 26-34.
- Weill, P., and Ross, J.W. 2009. *IT Savvy: What Top Executives Must Know to Go from Pain to Gain*, Boston, MA: Harvard Business Press.
- Weiss, J.W., Thorogood, A., and Clark, K.D. 2006. "Three IT-Business Alignment Profiles: Technical Resource, Business Enabler, and Strategic Weapon," *Communications of the Association for Information Systems* (18), pp. 676-691.
- Welbourne, T.M., and Trevor, C.O. 2000. "The Roles of Departmental and Position Power in Job Evaluation," *Academy of Management Journal* (43:4), pp. 761-771.
- Wernerfelt, B. 1984. "A Resource-based View of the Firm," *Strategic Management Journal* (5:2), pp. 171-181.
- Wernerfelt, B., and Karnani, A. 1987. "Competitive Strategy Under Uncertainty," *Strategic Management Journal* (8:2), March-April, pp. 187-194.
- Wijnhoven, F., Spil, T., Stegwee, R., and Fa, R.T.A. 2006. "Post-Merger IT Integration Strategies: An IT Alignment Perspective," *Journal of Strategic Information Systems* (15:1), March, pp. 5-28.
- Willcoxson, L., and Chatham, R. 2004. "Progress in the IT/Business Relationship: A Longitudinal Assessment," *Journal of Information Technology* (19:1), pp. 71-80.
- Wood, J.A. 2008. "Methodology for Dealing with Duplicate Study Effects in a Meta-Analysis," *Organizational Research Methods* (11:1), pp. 79-95.
- Xu, Y., Kim, H.W., and Kankanhalli, A. 2010. "Task and Social Information Seeking: Whom Do We Prefer and Whom Do We Approach?," *Journal of Management Information Systems* (27:3), pp. 211-240.
- Yayla, A.A. 2008. "Antecedents of IT-Business Strategic Alignment and the Moderating Roles of Goal Commitment and Environmental Uncertainty," in *The Barry Kaye College of Business*, Florida Atlantic University, Boca Raton, p. 174.



- Yayla, A.A., and Hu, Q. 2009. "Antecedents and Drivers of IT-Business Strategic Alignment: Empirical Validation of a Theoretical Model," in *European Conference on Information Systems*, pp. 1-13.
- Yukl, G. 2002. *Leadership in Organizations*, Upper Saddle River, NJ: Prentice Hall.
- Yukl, G., and Falbe, C.M. 1991. "Importance of Different Power Sources in Downward and Lateral Relations," *Journal of Applied Psychology* (76:3), pp. 416-423.
- Yukl, G., Seifert, C.F., and Chavez, C. 2008. "Validation of the Extended Influence Behavior Questionnaire," *The Leadership Quarterly* (19:5), pp. 609-621.
- Zhu, Y., Li, Y., Wang, W.Q., and Chen, J. 2009. "An Investigation into Post-Implementation Success of ERP: An Empirical Study of the Chinese Retail Industry," in *Americas Conference on Information Systems (AMCIS)*, San Francisco, CA, USA, pp. 1-11.
- Zviran, M. 1990. "Relationships between Organizational and Information Systems Objectives: Some Empirical Evidence," *Journal of Management Information Systems* (7:1), pp. 65-84.