VALUE CREATION AND CAPTURE IN STRATEGIC MANAGEMENT AND IT

OUTSOURCING THEORY: DEVELOPING AND

VALIDATING A FORMAL MODEL

by

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Abstract

The question of the value contribution of Information Technology (IT) to the firm is a continuing concern in Management Information Systems (MIS) research. While firms make significant investments in IT resources and capabilities in the hope of improving their competitive performance, research remains inconclusive as to the how (and how much) IT contributes to firm performance. One of the largest challenges in measuring this “Business Value of IT” is selecting the theoretical mechanism to predict and measure the contribution effectively. While the Strategic Management literature encompasses several theories that focus on how resources and capabilities may contribute to firm performance, it has yet to fully synthesize the underlying goals of value creation and capture in the transactions to acquire or develop them. In this sense, MIS literature may lack guidance for effectively applying theories to the IT context. This dissertation comprises a multi-method, three-essay research study to examine the concepts of value creation and capture in the context of IT acquisition transactions. My objective is to address these unresolved theory application issues in the Strategic Management and MIS literatures. In the first study, I analyze and synthesize theoretical mechanisms for value creation and capture. Through this synthesis, I develop a new concept, value channels, for the collection and distribution of value to transaction partners. In the second study, I refine this value channel concept through a multi-theoretical formal model. In the third study, I empirically test the value channel concept in a sample of IT acquisition and development
transactions. Collectively, these studies address unresolved theoretical and contextual issues of
the concept of value creation and capture in the Strategic Management and MIS literatures.
Dedication

I dedicate this dissertation to my family: my bride, Kim, for loving me through all of this, agreeing to accept the challenges we could foresee, and patience with those we could not. Alex and Katie for love, fun, and distraction; I did this, in part, to show you what is possible with effort and good teachers. To Mom and Dad, for their loving support. To Cathy Clifton and Iris Hurlbert, for their love and being educational role models.

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Chapter 1. Overview of the Dissertation

One of the more persistent perplexing issues in the MIS literature concerns the value of IT to the firm (Kohli & Grover 2008; Melville et al. 2004; Piccoli & Ives 2005). Research continues around this issue (Mithas & Rust 2016; Saunders & Brynjolfsson 2016; Drnevich & Croson 2013). In this sense, some research finds that the value of IT is based on the net cumulative value of individual IT assets through asset stock accumulation effects (Mithas & Rust 2016; Eisenhardt & Martin 2000; Teece et al. 1997). However, a complete understanding of the value contribution of individual IT asset investments to firm performance remains elusive due, perhaps, to theoretical limitations.

While the Strategic Management literature encompasses several theories that focus on how resources and capabilities may contribute to firm performance, it has yet to fully synthesize the underlying goals of value creation and capture in the transactions to acquire or develop such resources. Transaction Cost Economics (TCE), Property Rights Theory (PRT), Resource Based Theory (RBT), and Incentive Systems Theory (IST) each explain a perspective on value creation and capture through transactions. Thus, MIS research has lacked sufficient theoretical guidance to effectively apply strategic management theories of value to the IT context (Drnevich & Croson 2013; Lacity et al. 2011). Further, agreement on the underlying theoretical mechanisms of value creation and capture through the acquisition of assets also remains elusive (Mahoney & Qian 2013). My central premise is that this lack of theoretical agreement around the core concepts of value in asset acquisition transactions interferes with effectively understanding how
IT assets contribute value to the firm. Therefore, in this dissertation I seek first to develop a unifying view of the core concepts of value creation and capture, and then to apply this view to the IT context to develop a greater understanding of the relationship between the value of individual IT asset transactions and the value of IT to the firm.

**Research Problem and Motivation**

In this dissertation I examine the notions of value that underlie my understanding of the value creation and value capture aspects of IT asset acquisition transactions. The major research question is whether the unresolved issues in theory (value of IT), context (outsourcing IT), and phenomenon (IT project failure) are attributable to theoretical confusion over how exchange partners create and capture value from exchange (my central premise). If, in fact, the problem is that different theoretical lenses (TCE, PRT, RBT, and IST) have slightly different views of value, then I argue that by synthesizing a broader view, I may be able to resolve the issues. Therefore, the objective and contribution of this dissertation is to establish that broader view of value creation and value capture and apply it to the context of IT.

**Background**

Observationally, firms make significant resource investments in IT assets, presumably in order to improve the efficiency or the effectiveness (or both) of their operational capabilities, and in turn, hopefully, the firm’s overall financial performance. Firms make IT investments through individual projects to acquire specific technology assets, which can encompass both IT resources and their related capabilities, which they normally expect to contribute value to the firm (Tiwana 2009; Vermerris et al. 2014; Dierickx & Cool 1989).
Several Strategic Management theories consider individual value-creation projects and view firm-level value accumulation as the collective contribution of individually valuable transactions. Transaction Cost Economics (TCE), for example, views firm efficiency (value produced relative to costs) as the aggregate result of the proper placement of individual transactions inside or outside the firm (Williamson 1991a; Williamson 1991b; Williamson 1975; Williamson 1998). Similarly, Resource-Based Theory (RBT) views an individual resource or capability as valuable to the firm overall, to the degree that it has value and is rare, inimitable, and non-substitutable (Barney 1991; Peteraf & Barney 2003; Hoopes et al. 2003). Property Rights Theory (PRT) (Hart 1988; Hart 1995; Hart & Moore 1990; Grossman & Hart 1983) and Incentive Systems Theory (IST) (Holmstrom & Milgrom 1994; Holmstrom & Milgrom 1991; Holmstrom & Tirole 1991; Makadok & Coff 2009) consider how to motivate value-creating investments by partners in individual transactions. In this sense, these theories explain that firms that can properly acquire individual assets (IT or other) in a value-creating way should accumulate performance advantages over time from their investments (Dierickx & Cool 1989).

A broad body of research (Lepak et al. 2007; Priem 2007; Pitelis 2009; MacDonald & Ryall 2004; Mithas & Rust 2016) argues that these types of strategic goals underlie firm performance. Therefore, research should be able to apply these theories more effectively to understand better the creation of value from individual transactions.

However, despite its focus on cumulative and marginal value creation, strategic management research has yet to fully synthesize the related strategic goals of value capture, value creation, and cost minimization in transactions between sellers and buyers. This may be true, in part, because PRT, RBT, IST, and TCE appear to approach these goals from somewhat different bases (Mahoney & Qian 2013). Therefore, for a particular exchange, or in a particular
context such as MIS, scholars may lack guidance on which theoretical lenses to apply (Lacity et al. 2011) to discern the value contribution of resources and capabilities that the firm may acquire. However, Strategic Management research has made progress in joining several of the theories pairwise, suggesting that theoretical development is ripe for a broader, unified view of value creation and capture (Mahoney & Qian 2013). Therefore, I posit that a fuller synthesis of the concepts of value creation and capture from these Strategic Management theories may aid in developing an integrated theory of value in transactions.

While it may be possible for a firm that acquires individually valuable assets to lose firm-level performance through lacking a common strategy to employ those acquisitions synergistically, in this research I consider it more likely that accumulated value from well-performing projects is dissipated through subsequent poor performing projects. Such poor performing projects are the subject of extensive study in the MIS literature (Conboy 2010; van Oorschot et al. 2013; Yeo 2002). However, in such research, the value of the resulting product or asset to the buyer is not directly measured; it is typically either inferred from success or failure in implementation or simply assumed. Further, such research considers the primary lever of value creation to be controlling the cost of acquiring the asset. Thus, research often does not consider how the actions of the buyer and seller influence the value created by the exchange of the asset (Hong et al. 2013). As such, the literature does not present a clear picture of how individual IT asset transactions create value for the transaction partners. Therefore, in order to understand how asset acquisition transactions contribute to the overall value of IT to the firm, in this dissertation I study the value creation mechanisms of individual IT asset acquisition efforts.

In addition to engaging in projects that create value, firms also must be able to capture a share of that value. As a case in point, the strategic factor markets (SFM) logic of the RBV
(Makadok & Barney 2001; Barney 1986) considers the acquisition of individually valuable assets in efficient markets. SFM addresses a central paradox: how can a firm capture value from acquiring an asset when the market has already priced in all information regarding the asset’s value? The market price of the asset would be equal to its final value and the buyer would not be able to capture any value. In this sense, in order to finally derive value from a transaction, each transaction partner must be able to capture a share of the overall value created. Similarly, in IT projects, a buying firm can fail to capture value through allowing the acquisition price of the asset to meet or exceed the value of the asset to the firm. Such projects would likely be considered poor performing projects, and studied as such. However such categorization does not distinguish between the separate notions of value creation and value capture. In other words, if value capture is not considered along with value creation, it is difficult to determine whether a project failed because 1) little or no value was created in the asset acquisition transaction, which means neither partner was able to capture enough, 2) the transaction created enough value, but the buyer failed to capture a large enough share.

As SFM logic suggests, IT projects that create significant value for the firm likely are not based on commodity-like assets, such as hardware, that can be acquired via an efficient market, but are more likely based on the acquisition or creation of complex operational or dynamic capabilities (Drnevich & Croson 2013). Also, IT project research shows that failed projects often involve custom or tailored IT system projects (Boehm 2000; Kappelman et al. 2006; van Oorschot et al. 2013). Significant transaction-specific investments characterize such projects and defeat the “arms-length”, anonymous buyer and seller assumptions of efficient markets logic. However, the literature currently best explains the concepts of value creation and capture in the context of efficient markets. Therefore, the purpose of this research is to extend the market-
based concepts of value creation and capture to asset transactions, such as custom IT systems, which are exchanged outside of efficient commodity-like markets.

**Research Approach and Organization**

In this section, I outline my approach across the three essays that comprise this dissertation. The first essay (here, Chapter 2), entitled “Triangulating Value: Exploring Commonalities from Firm Theories with the Value-Price-Cost Paradigm,” synthesizes a broad view of value creation and capture to develop a new unifying value creation and capture concept: *value channels*. The second essay (here, Chapter 3), entitled “Hybrid Governance and Property Rights: A Formal Model,” integrates formal models of PRT and IST to mathematically and theoretically support the value channel concept by producing a formal model of value exchange in transactions. The third essay (here, Chapter 4), entitled “Towards an Endogenous IT Outsourcing Theory: Validating the Value Component of ITO Transactions,” presents evidence for a measure of value from the buyer’s side of the transaction to be used in the seller’s context. Such use would allow direct measurement of both seller’s value and buyer’s value in transactions, which would support an empirical validation of the integrated model from Chapter 3.

Cumulatively, through these three essays, I strengthen the understanding of value creation and capture in asset acquisition transactions. I provide further detail on each essay below.

**Overview of Chapter 2. Triangulating Value: Exploring Commonalities from Firm Theories with the Value-Price-Cost Paradigm**

The concepts of value creation and capture or appropriation remain central to the study of Strategic Management and are prominent factors in understanding various aspects of firm
performance and strategies to improve it. Broadly speaking, the concepts are relatively straightforward and commonly understood by scholars (Tirole 1988). However, the theoretical mechanisms underlying those definitions differ, as do explanations of why and how value is created and captured. As I noted above, four theories are commonly employed to explore and address value creation and capture in exchanges: TCE, PRT, RBT, and IST. These theories address value creation and capture, but may offer different explanations and predictions regarding the creation and capture of value (Mahoney & Qian 2013). In this sense, these four theories may explain differently the realized quantities of value created and value captured by the buyer and the seller in a completed exchange transaction. I argue that such a situation would represent a fragmentation of a fundamental concept in firm performance, and therefore in Strategic Management, and that a unified view of value creation and capture would benefit scholars in further understanding differential firm performance and strategies for improving it. Further, a broader, unified concept of value creation and capture may highlight similarities and differences in assumptions and premises between the theories. In this sense, a unified concept may allow scholars means to debate the validity of the various assumptions in specific cases and more correctly apply each theory to their research. Therefore, through this research, I attempt to synthesize such a broader understanding of these important concepts across these four theories.

My synthesis is based on the Value-Price-Cost (VPC) paradigm (Hoopes et al. 2003; Peteraf & Barney 2003; Tirole 1988). From the VPC perspective, the value captured by the seller in an exchange is the difference between the sale price of an artifact and the cost to create it. Further, the value captured by the buyer is the difference between the buyer’s valuation of the artifact in use and the price paid to obtain it. Finally, the value created in the exchange is the sum of the values captured by the buyer and the seller and represents the economic benefit of the
exchange (i.e. buyer’s valuation minus seller’s cost). In addition, for a completed exchange, there is only one sale price, only one artifact (or set of artifacts) for the buyer to value, and only one total cost to create that artifact. Therefore, for a completed exchange, only one amount of overall value has been created (buyer’s valuation minus cost) by the efforts and investments of the transaction partners and only one amount of value has been captured by the seller (price minus cost) and by the buyer (buyer’s valuation minus price).

I argue that TCE, PRT, RBT, and IST all directly or indirectly address value creation and capture in exchange transactions\(^1\). So, I utilize the VPC model as a common paradigm to analyze each theory’s explanation of central concepts of value: value creation, value capture, cost minimization, and value maximization. I recognize that these are different theories with different intended purposes, canonical questions, and specific language (Mahoney & Qian 2013). However, several of them have been joined pairwise and they each, to some degree, explain the central concepts, so I attempt to abstract across them to find common ground on the “big picture” issues of value creation and capture. I view each theory’s explanation of the central concepts as basically correct and synthesize an aggregate view of value creation and capture across the four theories. In this sense, I agree that “…there is a shared organizational economics logic that enables me to coherently tie various strands of the research literature into one cord.” (Mahoney & Qian 2013) I utilize the VPC model as such logic.

I synthesize value creation, value capture, cost minimization, and value maximization across the four theories by developing as simple a statement as possible of each theory’s view of

\(^1\) TCE and PRT are specifically transaction-oriented explanations of how exchange partners capture value with (arguably) implications on how value is created. IST explains how a transaction is organized to encourage value creating activities via value capture opportunities. RBT is not a transactional theory, but has implications on transactions via its role in the development of the VPC and Strategic Factor Market logic. RBT also explains the sources of value in assets.
each concept. I then attempt to synthesize a single comprehensive statement for each individual concept, such as value creation, across the four theoretical statements on that individual concept. In this way, I generate an inclusive view of each of the four concepts that, I argue, incorporate all four theoretical viewpoints and present a different perspective on each concept. In my view, this treatment is similar to, although less formal than, the synthesis in Gibbons (2005), but with a specific focus on the components of value creation and capture. I am also inspired by the Mahoney & Qian (2013) development of market frictions logic, which also analyzes the components of value, but my research focuses on individual transactions in order to address, in general terms, the value creation and capture concepts highlighted in the VPC model. I believe my research is complementary to those studies.

Through my synthesis, I identify and develop the concept of value channels which: 1) accumulate and hold the value produced by effort and investment during the transaction, as incented by the transaction governance form, and 2) direct that value to a transaction partner based on that partner’s property rights as established by the transaction governance form. I then apply the value channel concept to two common concerns among the theories, opportunism and bargaining, in order to demonstrate its usefulness in theorizing about value creation and capture in transactions. In this way, I introduce the concept and contribute to the literature on value creation and capture, the literatures on each of the four theories, and research into competition for exchange partners in the Value Capture Model (Ryall 2013; MacDonald & Ryall 2004).

I conclude this chapter by discussing some of the major remaining issues and offer a suggested agenda and specific recommendations for future research on value channels. In particular, I note that both PRT and IST mathematically model value created in the exchange and captured by each exchange partner. I also note that these two models indirectly consider value
channels: PRT’s use of the concept of asset usages, which are valuable, reverting to the owner of the asset and IST’s attachment of value to ownership shares of assets, among other things. These models, along with the recognition that a completed transaction produces only a single amount of value, may be combined into a formal model that includes the value channel concept. I attempt to develop such a model in Chapter 3.

**Overview of Chapter 3. Hybrid Governance and Property Rights: A Formal Model**

Scholars have identified existing hybrid governance forms that correspond with the TCE notion of transaction governance forms (Hennart 1993; Williamson 1991a; Ebers & Oerlemans 2013; Ménard 2004): hybrid forms are neither market-based nor are they hierarchies that exist within the firm, but they have some properties of both these forms. According to TCE logic, transaction partners use hybrid forms to minimize transaction costs under conditions of uncertainty and high levels of specificity in the transaction (Williamson 1985; Williamson 1991b). On the other hand, PRT explains that joint efforts, such as hybrid forms, are less efficient than integration, or hierarchical forms (Hart 1995). However, a new definition and taxonomy of TCE hybrid governance forms was recently explained in research on IST (Makadok & Coff 2009). In this chapter, I apply the new definition and taxonomy of hybrid forms along with the value channel concept developed in Chapter 2 to resolve this theoretical dilemma.

PRT and IST both present formal models which explain that value created in a transaction is shared between the transaction partners through value capture activities. These value capture activities result in the buyer and seller each taking a share of the value created. These amounts are described as the buyer’s payoff and the seller’s payoff, respectively. As I explain early in this chapter, for a completed transaction, we can conceptualize that only one
amount of value is captured by each transaction partner. In Chapter 3, I apply this insight to the integration of the two models, as follows: PRT and IST both formally model the buyer’s and seller’s payoff. Using the transitive property of equality, I set the PRT equation for buyer’s payoff equal to the equation for buyer’s payoff in IST. I do the same for the seller’s payoff equations. This treatment allows me to derive a model which incorporates the strengths of both systems: PRT’s focus on property rights and IST’s focus on incentives. I analyze first-order conditions from the model to understand each partner’s optimal strategy for creating value and capturing a share of that value from the transaction. In this way, I generate testable propositions for the predictions of those theories.

By showing that PRT and IST are compatible, I contribute to a research stream on commonalities between the several perspectives that explain how transaction partners create and capture value in transactions. Since both PRT and IST consider the value transfer capabilities of ownership of assets, the formal model clearly shows value channels and how each partner has claims on them through asset ownership shares. In addition, I contribute to the value creation and capture literature by providing a combined mathematical model of value creation and capture which allows for more robust analysis of asset acquisition transactions. I strengthen mezzanine-level theory of how firms interact, as distinct from macro theories on interaction between the firm and the overall environment and micro theories of how firms behave as collections of individuals. I take a first step in modeling the cost, and therefore the risk, of mismatches between the transaction properties and the governance form. Finally, I suggest specific ways to use the propositions to validate empirically both my model and the value channel concept discussed in Chapter 2. In Chapter 4, I begin this process of empirically validating the model and the value channel concept.
Overview of Chapter 4. Towards an Endogenous IT Outsourcing Theory: Validating the Value Component of ITO Transactions

IT outsourcing (ITO) literature is currently debating the theoretical foundations of the make or buy decision for IT support services (Schermann, Dongus, et al. 2016; Lacity & Khan 2016; Schermann, Yetton, et al. 2016; Aubert & Rivard 2016) and a candidate structure for a new theory of ITO has emerged (Lacity et al. 2011). However, that structure does not include consideration of value delivered to the ITO transaction partners through transaction governance. Therefore, my formal model of value and governance (derived in Chapter 3) would likely be a valuable contribution to this growing theory of ITO. As a first step toward making this important contribution to the ITO literature, in this chapter I conduct an initial validation test of my formal model of value and governance in the ITO context.

In order to validate the formal model, I need the ability to measure the value created and captured by each partner (i.e., both buyer and seller) in a transaction. While buyer value has been studied for some time, and a validated model exists (Patterson & Spreng 1997), there do not appear to be any validated measures of seller value (beyond merely price minus cost) in hybrid transactions nor a validated model. Without validated measures or a prior model for seller value, I am not able to effectively validate my complete formal model for the ITO context within the scope of this chapter. Therefore, as a first step towards full validation, given the validated buyer’s side model, I will attempt to validate the seller’s value portion of the model, using the logic from the buyer’s side model. Thus, the research question of Chapter 4 is: can the Patterson & Spreng (1997) model of buyer value be extended to and validated in the seller’s context? An answer to this question constitutes a first step in validating the formal model and contributes to the ITO theory research stream (Lacity et al. 2011).
Patterson & Spreng (1997) explain six components that contribute to value to the buyer in transactions in the management consulting context. The model also considers the relationships between Value, Satisfaction, and Intent to repurchase from the buyer’s perspective. In Chapter 4, I apply that model to a sample of ITO transactions from the seller’s perspective. As a result, several of the components, along with the relationships between Value, Satisfaction, and Intent should also hold for the seller in ITO transactions.

Finding that the seller’s conception of value is similar to that of the buyer, and delivering a validated measure of seller’s value sets the stage for future research that tests the applicability of the formal model from Chapter 3. This future research can measure buyer’s and seller’s value as a function of the governance form and the properties of the transaction in the ITO context. If validated in this way, the formal model can be used to incorporate governance form selection and value delivered into the nascent theory of ITO (Lacity et al. 2011). That addition will strengthen ITO theory and contribute to the ITO literature along with clarifying the contribution of Strategic Management theory in that context.

**Organization of the Dissertation**

In this chapter, I outlined the approach of this research to issues of value creation and capture in Strategic Management theory applied to the IT outsourcing context. The next three chapters comprise the three essays introduced above. In the final chapter, I summarize my findings, discuss implications for the Strategic Management and MIS literatures, and offer suggestions for further research on these streams.
Chapter 1 References


Chapter 2. Triangulating Value Creation and Capture: Exploring Commonalities from Firm Theories with the Value-Price-Cost Paradigm

Introduction

The concept of value creation and its capture or appropriation remains a core component of the field of Strategic Management and is a prominent factor in discussions about firm performance, strategy, competitive advantage and its sustainability, resource management, and business-government relations across various theoretical streams. Scholars generally accept that firms create value by delivering a tangible or intangible artifact that a customer desires and purchases at a price higher than the cost of the resources required to produce it (MacDonald and Ryall, 2004; Priem, 2007), that at least one of the involved parties is better off after the purchase through capturing at least some of that value, and that the exchange of artifact for money occurs within a transaction (Benham and Benham, 2010). After those points of agreement, however, theoretical and scholarly conceptions of how and why value is created and captured diverge considerably. In particular, four Strategic Management theories address value creation and capture in exchanges between parties [transaction cost economics (TCE), property rights theory (PRT), the dynamic capabilities and resource-based theory (RBT), incentive systems theory (IST)] and may diverge in explaining and predicting the creation and capture of value (Gibbons, 2005; Mahoney and Qian, 2013). Nevertheless, in any particular instance of exchange, there is but a single amount of value created and a single amount captured by each exchange partner.

Several key questions for the study of value creation and capture remain unanswered, such as: What are the essential similarities and differences between how each of these theories of
the firm views value creation and capture? How are these similarities and differences expressed, and to what extent does each theory’s “specialized language” (Mahoney and Qian, 2013: 1020) emphasize important nuances rather than obfuscate commonalities? What can TCE, PRT, RBT, and IST tell researchers about the nature of value creation and value capture more generally? In order to make progress toward a general statement that may shed light on these questions, I begin by considering each theory to be “correct” and state a basic view of its original formulation. I then view each theory through a Value-Price-Cost (VPC) (Hoopes, Madsen, and Walker, 2003; Peteraf and Barney, 2003; Tirole, 1988) lens to highlight each theory’s mechanisms for: value creation, value capture by each exchange partner, increasing value to the purchaser, and decreasing cost to the producer. With these mechanisms clarified, I posit that only one amount of value is created and only one amount is captured by each partner and attempt to synthesize a collective view of each construct across these theories of Strategic Management. This study highlights the distinctive contributions of each theory, produces broadened definitions of value-related concepts, and identifies areas in which the theories can usefully be combined or contrasted in order to provide ideas for more detailed research. Where significant differences exist, I note them without attempting to judge which one is “correct”. I expect these differences to provide some of the more interesting avenues for future research on value creation and capture. Through use of basic statements of each theory, I am attempting to craft a “crude look at the whole” (Gell-Mann, 1995: 346) that may serve as a basis for future refinement of the concepts of value creation and capture that stand at the core of Strategic Management research.

The organization of this paper is as follows: In this section, I introduce the context of the study. In section 2, I introduce the VPC model and discuss the applicability of each theory (i.e., TCE, PRT, and RBT) to an explanation of the four central concepts of value creation and
capture. In section 3, I analyze each theory for its approach to the components of the VPC model. In section 4, I synthesize an inclusive cross-theory view of each VPC component and discuss implications on a broader understanding of the components. This synthesis indicates: 1) where the different organizing bases are contradictory, complementary, or somehow equivalent and disguised in different terminology; and 2) opportunities and an agenda for future research the community could conduct to further examine and validate or refute these observations. In section 5, I conclude with a summary, some broad commonalities between the theories, and future research.

**Theory Development**

Given that each theory has “its own canonical problem and specialized language” (Mahoney and Qian, 2013: 1020), similarities in mechanisms of value creation and capture across the theories (Gibbons, 2005) can be obscured by the different words used to describe those mechanisms. The VPC model (Hoopes et al., 2003; Peteraf and Barney, 2003; Tirole, 1988) offers a common language for analyzing not only the contribution of each individual theory but the extent to which each theory complements (or contradicts) the others. Theoretically, as VPC is basic economics, it should apply to any exchange (Tirole, 1988). For this reason, I will use VPC to form a common set of abstractions for analysis of the theories and as a common language in an effort to reveal fundamental commonalities and structural differences among the theories. Next, I describe VPC definitions of value, cost, price, value created, and value captured.

**Value-Price-Cost Model**

In the VPC view of an exchange, the purchaser places a value on the artifact to be exchanged. VPC denotes this quantity as B and refers to it as ‘perceived benefits’ (Peteraf and
Barney, 2003). In economics, this quantity represents the point of indifference for the purchaser between possessing an amount of money and possessing the artifact and is considered the maximum that the purchaser would pay for the specific artifact in the exchange (Tirole, 1988). For this reason, it is sometimes denoted *willingness to pay* (WTP); I use this notation in this essay (WTP=B). WTP is a private, subjective valuation made solely by the purchaser; I assume it to be constant for the duration of the exchange. It is typically not measured, but is estimated with a lower bound of exchange price (Tirole, 1988).

The seller has a cost (C) to produce the artifact for exchange. This cost is presumed to be private information held by the seller, but may be less subjective than WTP (Tirole, 1988). VPC shows that most research considers C to be marginal cost (Hoopes et al., 2003). VPC considers C to have been realized in the production of the artifact and, therefore, fixed for the duration of a single exchange.

Price (P) is the amount of money the buyer exchanges for the seller’s artifact. In economic market theory, both the buyer and the seller are price takers, with price set by aggregate demand and supply (Tirole, 1988). However, one view of VPC (Hoopes et al., 2003) expressly allows bargaining over price, while another (Peteraf and Barney, 2003) appears to disallow it. In this essay, for generality and applicability to the broadest range of theories, I will assume that the exchange partners bargain over price.

In VPC, the economic value (EV) of an exchange is the difference between the benefit of the artifact to the buyer and the seller’s cost of creating the artifact that delivers that benefit (EV=WTP-C). In this sense, EV is the total amount of value created by the exchange and is a measure of the total benefits available to the exchange partners (Tirole, 1988). In VPC, EV is strictly positive. A negative EV would only arise if one or both of the exchange partners had a
negative payoff (WTP<P or P<C), meaning that one of the partners would be worse off after the exchange. In this case, the worse off partner would simply not participate in the exchange (MacDonald and Ryall, 2004). I do not argue that it is never the case that, for example, an artifact is sold at a loss (C>P), but that the seller intends to acquire value from other sources when choosing to do so.

In VPC, P divides EV between the buyer and the seller and, in this way, determines each party’s payoff (Peteraf and Barney, 2003) or value captured. The seller captures a share of EV (seller’s payoff or surplus, often considered profit) in the amount P-C. The buyer captures a share of EV (buyer’s payoff or surplus) in the amount WTP-P. The partners completely divide EV and I consider both partners to be attempting to maximize their own payoff from each exchange. Therefore, under the assumption of ex ante realization of C and WTP through the creation of the artifact for exchange, the transaction partners are competing in a zero sum game; increasing one partner’s payoff necessarily decreases the other partner’s payoff. In this sense, P is a primary mechanism the partners can use to change the value captured. For this reason, I discuss both price-setting mechanisms and other means of capturing value for each theory.

Of course, the six quantities in the VPC are related mathematically. Other things equal, a higher price increases the seller’s payoff while decreasing the buyer’s. A lower price has the opposite effect. Lowering cost is the other means to increase the seller’s payoff. As described previously, EV is the difference between WTP and C which is equal to the sum of the seller’s and buyer’s payoffs. Therefore, if I understand or observe some of the quantities, I can calculate others. As an example, should I be able to observe P and the buyer’s payoff, I would be able to calculate WTP without observing it. Since different theories focus on different VPC quantities, I make use of these relationships in the analysis. Therefore, if in analyzing a theory, I understand
how it views the determination of $P$, $C$, and $WTP$, I likely do not need to develop an additional separate view of buyer’s and seller’s payoffs and EV.

In this research, I postulate that in any actual exchange, these six quantities are realized and the exchange produces a single value for each. For example, in any observed exchange, there is only one amount for $P$. The theories may describe $P$ differently, but they all describe the same actualized quantity. Similar reasoning applies to $WTP$ and $C$ and the derived values of EV ($WTP-C$), buyer payoff ($WTP-P$) and seller payoff ($P-C$). Utilizing this postulate, I analyze each theory for indications of its approach to how $WTP$, $C$, and $P$ may be set or changed. In addition, I will analyze any direct implications of each theory on EV (direct value creation implications), buyer payoff ($WTP-P$) and seller payoff ($P-C$) to triangulate on the underlying values of the VPC model.

**Transaction Cost Economics**

TCE represents the culmination of decades of research on the differences between market exchanges and productive activities within the firm (Coase, 1937; Commons, 1932; Williamson, 1975, 1979, 1988a, 1998), with its influence attested by a share of the 2009 Nobel Prize in economics for its primary developer, Oliver Williamson. TCE refers to transactions as transfers of goods or services across stages of economic activity (Williamson, 1975). Such transactions can be organized under one of three structures: market, hierarchy (within the firm), or hybrid (forms that are between market and hierarchy, such as alliances and joint ventures). One of the core tenets of TCE is discriminating alignment between the transaction properties and the chosen governance form. This alignment serves two purposes: minimize transaction costs, such as negotiating contracts and monitoring performance (Williamson, 1991a), and guard against opportunism, or advantageous ex post value capture, by the other transaction partner.
Both opportunism and non-minimized transaction costs, then, are means of value erosion, and efficient transactions avoid them (Williamson, 1991b). In this sense, I view TCE as explaining transaction value preservation, if not actually proposing a theory of value creation and capture.

**Property Rights Theory**

Grossman, Hart, and Moore (Grossman and Hart, 1986; Hart and Moore, 1990; Hart, 1995) created a research stream into the incentive properties of ownership and property rights in order to remedy the perceived incentive weaknesses of TCE as an overall theory of the firm (Hart, 1995). In the words of Hart, “If there is less haggling and hold-up behavior in a [hierarchy], it is important to know why. Transaction cost theory, as it stands, does not provide the answer.” (Hart, 1995: 28, emphasis in original). GHM offers a formal model of a transaction in which both partners have the option to make an ex ante non-contractible investment that will increase the value created through the transaction and thus improve the overall economic efficiency and the potential payoff to each transaction partner. However, since the investments cannot be contracted, the return on those investments will be divided by (Nash) bargaining. In this way, GHM finds that the investing partner will bear all of the investment cost of creating the additional value, but will have to share that value with the non-investing partner, thus neither partner will actually invest due to the fear that the other partner will not (Hart, 1995). According to GHM, the answer to the lack of investment in this scenario (absent ex ante collusion, which is the most efficient) is for the firms to integrate – the transaction partner with the most effective contribution, either human assets, productive assets, or investment, buys the relevant assets of the partner firm (Hart, 1989, 1995). Such integration allows the investor to acquire all of the value produced by the investment, making the investment more attractive and more likely to
occur. In this sense, I view PRT as explaining value creation through investment and effort and value capture through residual rights to assets.

**Resource-based Theory**

RBT considers the value of resources that the firm owns and uses for productive purposes and explains how resources may support competitive advantage and sustained competitive advantage. Unlike both TCE and PRT, RBT does not directly consider transactions. However, research into strategic factor markets (SFM) (Barney, 1986; Makadok and Barney, 2001) will serve to allow me to draw some conclusions on exchange based on RBT logic. A core tenet of RBT is the heterogeneous distribution of resources among firms (Barney, 1986; Hoopes et al., 2003; Peteraf and Barney, 2003). In this sense, firms are able to create and capture value based on differences between the resources they possess or can obtain and those possessed or obtainable by competitors. In this sense, I view RBT as explaining the foundations of value creation and SFM as explaining how that value can be captured, or not, by exchange partners.

**Incentive Systems Theory**

Incentive System Theory (IST) (Holmstrom and Milgrom, 1991, 1994; Holmstrom and Tirole, 1991; Holmstrom, 1999; Makadok and Coff, 2009) initially and primarily considered the structure of incentives between a principal (buyer) and an agent (seller). IST, in particular, explains the nature of such incentives and how they can be arranged to motivate the seller to a value maximizing level of effort. As an example, suppose an exchange between a firm and an individual who performs some task; the task necessarily involves an asset; the value of the asset changes with use in the exchange. If the firm owns the asset, the individual is an employee who

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2 IST typically uses the terms “principal” and “agent”. I substitute “buyer” and “seller” respectively for clarity and ease of comparison with the other theories.
has no share of the final value of the asset and, thus, little incentive to improve its value with maintenance effort. If, on the other hand, the individual owns the asset, the individual is a contractor who has a full share of the final value of the asset and thus significant incentive to improve its value with maintenance effort. All else equal, IST finds that the efficient incentive structures of these two exchanges are different (Gibbons, 2005). Recent research (Makadok and Coff, 2009) in IST incorporates a taxonomy of hybrid governance forms based on three dimensions of incentives that correspond to three value creating tasks: asset ownership corresponds to an asset maintenance task, authority by the buyer inversely corresponds to a personal activities task (which has value to the seller, but not the buyer), and productivity incentives (bonus, piece rate, etc.) correspond to a current production task (which has value to the buyer, but not directly to the seller). In this sense, I view IST as explaining how incentives motivate the seller’s effort in value creation and how ownership supports value capture. I note that the model does not include a term for investment by the buyer. In addition, the model allows for different sellers to have different responses to any governance form choice.

**Analysis**

**TCE and the Components of Value**

I do not find a direct statement in the literature regarding a TCE view of value creation. However, I will derive a view from one of the core tenets of TCE: asset specificity. In the words of Williamson, , emphasis added (1988a: 70, emphasis added), “Asset specificity has reference to the degree to which an asset can be redeployed to alternative uses and by alternative users without sacrifice of productive value.” A non-trivial investment by one of the transaction partners to improve the productive value of an asset (Williamson, 1988a) underlies the tenet of asset specificity. Since the asset cannot be used in an alternate transaction without loss of
productive value, I find that the implied means of differential value creation in TCE is this investment in increasing the productive value of an asset – asset specificity.

Physical co-location is a commonly used example of asset specificity. In this example, a supplier makes an investment in placing a manufacturing site in close proximity to the purchaser’s site, perhaps to lower shipping costs. In this way, the supplier is increasing the value creation of the transaction, because the shipping costs, which would be paid to a third party, would lower the amount of value available to the transaction partners. However the seller’s investment in relocating, while increasing value in the transaction, represents precisely the kind of investment that gives the buyer an opportunity to capture additional value from the transaction, as I will discuss below. While this specific example could be viewed as lowering C, other examples of asset specificity (e.g. investments in increasing product quality) are clearly intended to increase WTP, so I generalize asset specificity to the level of value creation.

As I indicate above, TCE focuses heavily on opportunism by a transaction partner. A significant body of literature discusses and debates opportunism. Its assumption in TCE was, at one time, the basis of one of its major criticisms (Ghoshal and Moran, 1996; Moran and Ghoshal, 1996; Williamson, 1996). However, since some form of opportunism appears to be well accepted (Macher and Richman, 2008), I will discuss it in its most basic TCE form, as an ex post unilateral attempt to re-divide the value created in the transaction. Asset specific investments are one mechanism that enables opportunism in transactions. Once the investment is made by one partner, the partners become bilaterally dependent (Williamson, 1998), meaning that each relies on the other, specifically, to complete the transaction in an efficient manner. However, this reliance may not be permanent. If the non-investing partner can credibly threaten to exit the transaction in favor of a different, external transaction partner, the non-investing partner can
renegotiate the transaction and capture some or all of the productive value of the specific investment. This is, in effect, a value capture strategy under bilateral dependency. Research has noted that asset specific investment is not the only means of creating bilateral dependency. Gibbons, (2010: 270), for example, notes that time pressure can also be a source of bilateral dependency as “delay becomes a potentially effective strategy for extracting price concessions ... arranging to have an alternative supplier in place on short notice introduces the prospect of strategic holdups”. For these reasons, I credit bilateral dependence and opportunism avoidance as the mechanism for value capture in TCE.

Considering price from the TCE perspective, I immediately run into the complication that TCE comprises at least three different pricing mechanisms, one each for hierarchical and market transactions: fiat (bonus) or employment contracts (salary or commission) for the former and market pricing for the latter. In addition, hybrid transactions employ bargaining to set exchange price. In this sense, I find that, overall, TCE allows bargaining for price as compared to efficient-market-based price taking by both transaction partners.

TCE is skeptical on the subject of market power, favoring “first order economizing” (Williamson, 1991b: 75) to improve transaction outcomes. In this way, rather than using market power to capture value by raising prices, TCE finds that lowering cost is a primary means of success. Mechanisms for lowering cost include “harmonizing, credible commitments, adaptation, and discriminating alignments” (Williamson, 1991b: 76).

Within TCE, WTP is a function of the properties of the exchanged asset and is judged solely by the purchaser. In this sense, properties of the asset that are targeted at the buyer’s specific needs will increase WTP, but these properties likely will make the asset more tailored to the specific purchaser. Such efforts by the seller to meet the specific needs of the buyer, then,
are transaction or relationship specific and, as such, present a hold up opportunity for the buyer. Consummative performance (Hart and Moore, 1990; Williamson, 1975) is a similar notion that is equally difficult to protect under contract (Aghion and Holden, 2011; Hart and Moore, 2008). For these reasons, I find that relationship-specific investment is the primary means of increasing WTP in TCE.

**PRT and the Components of Value**

PRT assumes gains from trade (Hart, 1995: 36), which are the basis for value creation (increasing EV) in the transaction. Further, PRT indicates that partners’ investments increase those gains by increasing the value (WTP) of the traded asset or decreasing the cost (C) of producing the traded asset. PRT also finds that such investments are relationship specific (Hart, 1995: 36) in that they are more valuable if the transaction is completed than if it is not. Therefore, value creation in PRT is based on increasing gains from trade by making investments that are relationship specific. The nature of relationship specific investments is similar to that in TCE in that some of the value of the investment is lost if the transaction partner changes due to (e.g.) non-completion of the transaction.

PRT shows that firms are able to invest in value creation within the exchange transaction, but do not do so due to inability to acquire all of the proceeds of that investment. The non-contractibility of such investments means that the transaction partners cannot reliably exchange investments of equal cost and value. In this sense, PRT finds that the partners’ motivation to make the investment(s) is hindered and finds that unified ownership removes the hindrance (Hart, 1995). Therefore, PRT demonstrates that when partners properly align ownership (e.g. merge), motivation to invest is also aligned through the resulting capture of all of the value produced by the investment (Hart, 1995). These investments create value (EV) through lowering
cost (C). Therefore, I find that PRT argues for investment motivated by the ability to capture the return on that investment as the means to minimize costs (Hart, 1989).

Similarly to the PRT logic for cost minimization, WTP is increased through investment. In fact, PRT does not distinguish between cost-lowering and WTP-increasing investments (Hart, 1995). Therefore, I also find that PRT argues for ownership-motivated investment as the means to maximize WTP.

In PRT, when ownership of the productive assets is split between the transaction partners, negotiation under assumed information symmetry becomes the basis for value capture (Hart, 1995: 38). This situation results in a symmetric information Nash bargaining solution, which produces a 50:50 split of transaction value (EV) between the partners. According to PRT, under unification of ownership, which is the efficient solution to the investment problem, there is no value sharing because there remains only one firm to capture value. Thus the value capture mechanism in PRT is information symmetric Nash bargaining or unified ownership.

As I note above, in PRT, price is set through a Nash bargaining solution under the assumption of information symmetry. In this sense, price is set at the midpoint between C and WTP and EV is equally divided between the exchange partners (Hart, 1995).

**RBT and the Components of Value**

RBT defines competitive advantage as the creation of more economic value than a marginal competitor and defines economic value as the difference between WTP and C. Peteraf and Barney, (2003), note that this definition of competitive advantage is relative to the exogenous amount generated by the marginal competitor. WTP is a function of differentiation and WTP and Cost are both functions of “superior critical resources” (Peteraf and Barney, 2003:

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3 I note that Peteraf and Barney, (2003) and Hoopes et al., (2003) have already mapped RBT to VPC and review those arguments in this analysis.
“Superior resources are more ‘efficient’ in the sense that they enable a firm to produce more economically and/or better satisfy customer wants.” (Peteraf and Barney, 2003: 311) while:

Critical resources are critical in two important senses. First, they are essential to the firm’s effort to generate differentially greater value. … Second, they are the limiting factors in determining how much of market demand the focal firm is able to satisfy. As limiting factors, then, they are scarce in the sense that their supply is insufficient to cover the demand for their services. (Peteraf and Barney, 2003: 316)

RBT takes a market-based view of price setting in that price is determined exogenously by supply and demand factors. Price divides economic value between buyer surplus (V-P) and seller surplus (P-C). In this sense, with little direct influence (other than bargaining) over price, value capture for the seller becomes an issue of lowering costs. The seller can attempt to do this through efficiency means similar to TCE. In the words of Peteraf and Barney, (2003: 311), “RBT [is] among the ranks of theories of strategy and theories of the firm, such as transaction cost economics, that emphasize ‘economizing’ over ‘strategizing’ (Williamson, 1991b).”

Further, the RBT “treats the type of ‘first-order economizing’ issues that Williamson, (1991b) says are often neglected.” (Peteraf and Barney, 2003: 312) The RBT views lowering costs as an exercise in finding and utilizing resources that deliver more productivity for fewer dollars. Further, “a resource, such as a location with lower transportation costs or capabilities that result in economies of scope or scale independent of technology can result in greater efficiency.” (Hoopes et al., 2003: 891) RBT considers cost relative to competitors, similar to its view of competitive advantage, so a lower cost than the marginal firm is consistent with capturing greater value from the transaction.

For the buyer, value capture is related to an increase in WTP, which is based on the exchanged product. RBT (not being a transaction-based theory) focuses on the seller as the
owner of productive (valuable, rare, inimitable, and non-substitutable, VRIN) resources (Barney, 1991). However, in studying strategic factor markets (Barney, 1986), Makadok and Barney, (2001) find that a buyer facing an efficient market for VRIN resources may only (barring luck) extract value in purchasing that resource if information asymmetry exists. This shows that it is possible for a buyer in a transaction to hold closely information regarding the buyer’s expected value of an asset. In this sense, the buyer may be able to preserve value by hiding information about the value he observes in the asset, which is in accordance with common observation. However, this assumes that the seller does not already have such information, as it is difficult to imagine how a buyer would remove from the seller any information that the seller may already possess. Nevertheless, I find that the primary means for the buyer to capture value is to avoid its erosion through maintaining information asymmetry.

In RBT, WTP is based on the buyer’s expectations of the product to be exchanged. The seller has means to attempt to increase the buyer’s WTP through:

…resources like a brand or a proprietary technology and capabilities like superior quality management or customization skills can enhance buyer value. Traditional value drivers include quality (durability, design), technology (functionality), delivery, customization, service, product line breadth, geography (location or breadth), risk assumption (e.g., warranties), brand or reputation, network externalities, and complements. (Hoopes et al., 2003: 891, note 5)

The RBT view of value creation rests on qualities of the resources used in the productive activities of the firm. VRIN resources explain differential performance, competitive advantage, and value creation and capture by firms. RBT accommodates a version of efficient markets theory in resource acquisition by explaining that the firm must be able to generate more value from a resource than is expected by the seller at the time of its acquisition (Leiblein, 2003), otherwise, the seller will capture all of the value that could be derived from that resource. In this
sense, RBT explains that value is preserved by differential information about the uses of resources.

**IST and the Components of Value**

From its roots in principal-agent theory (Gibbons, 2005), IST considers effort by the seller as the sole source of value. The recent formulation by Makadok and Coff, (2009) formally models economic value created as a function of the seller’s effort allocation among tasks. Tasks may produce value for the buyer or the seller or both, in the case of contractible shared rights (e.g. an asset maintenance task may have value to both the buyer and the seller, depending on the allocation of ownership of the asset). The seller chooses her effort allocation in response to incentives created by the buyer’s choices on the three dimensions of governance form. In this sense, IST finds that the buyer influences EV through choice of governance form and the seller merely optimizes effort allocation in response to the buyer’s choice. Thus, despite the fact that the seller’s effort actually creates EV, changes in the amount of EV created by the seller are solely influenced by the buyer’s choice of governance form.

In IST, cost to the seller is simply the private cost of the effort expended as an optimizing response to the buyer’s choice of governance form. Cost is modeled as a direct function of the seller’s effort. The seller allocates effort to maximize payoff - balancing price, as a positive function of effort, with cost, as a negative function of effort. So, in IST, cost minimization is the seller’s responsibility, within the confines of the incentives created by the buyer’s choice of governance form. In this sense, IST does not directly model cost, but the seller is assumed to maximize value, in part by allocating effort efficiently, and to minimize the cost function of effort (e.g. cost per unit of effort). In addition, the buyer affects cost through analysis of synergies between tasks. Synergistic tasks have a lower aggregate cost when performed together.
than when performed separately. The buyer identifies synergistic task pairs and incents the seller to perform one of them, relying on the seller’s efficient behavior to incent effort on the other. In this way, IST views cost minimization as efficient behavior by both partners.

Similarly, in IST, WTP is simply the private “value of current production” to the buyer as a function of seller’s effort expended as an optimizing response to the buyer’s choice of governance form. The buyer’s WTP increases as the agent expends more effort in productive activities, as compared to asset maintenance and personal activities. In this sense, WTP is a function of effort, but the function is not expressed in detail in the model.

IST models P as a base rate plus a commission or piece rate as a percentage of the value of current output. The base rate is considered a constant; therefore, it does not affect the seller’s effort, nor is it affected by the seller’s effort. The commission portion of P is a function of effort through the effect of effort on the value of current output. Both the base rate and the commission rate are set by the buyer as a component of the governance form. In this way, the buyer’s choice of reward structure influences P both by incenting effort to increase the value of the current output and by setting the percentage of that value that the seller receives in P.

IST views value capture as a function of contractible and residual rights to assets and human capital. In this sense, those rights carry value that naturally flows to the owner of the rights. As an example, the owner of the productive asset has the right to capture any change in its value during the transaction. Thus, maintenance effort by the user of the asset puts value in this channel to be captured by the owner of the appropriate right. This effort represents a cost to the user and creates value for the owner.

IST places emphasis on tasks that provide value to transaction partners. In fact, tasks are defined, in part, by which partner receives the value from effort on that task. In this sense, IST
explains that certain tasks naturally route value in predictable ways to transaction partners. Extending this explanation, I note that effort on a task creates cost and delivers value, removing value from the seller (through cost) and delivering it to the seller in another way (personal activities or asset value) or to the buyer (productive activities). I will build on this notion later in this essay.

**Discussion and Synthesis**

In the prior sections, I have performed an initial analysis of TCE, PRT, RBT, and IST from the VPC perspective. I am now able to address the synthesis of a broader view of value creation, value capture, cost minimization, and value maximization. I have listed the results of the analysis in Table 1. In each section, I work down a column of Table 1, stating the position of each of the four theories on each VPC quantity (e.g. value creation). I will then attempt a statement on each quantity that broadly includes all four views. I will also attempt to identify significant differences between pairs or groups of the theories.
Table 1: Views of value from four theories

<table>
<thead>
<tr>
<th>Theory</th>
<th>Basis for value creation (WTP-C)</th>
<th>Basis for value capture (P-C &amp;/or WTP-P)</th>
<th>Basis for cost minimization (decrease C)</th>
<th>Basis for value maximization (increase WTP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBT primarily firm-to-firm (SFM logic)</td>
<td>Superior differentiation and/or lower costs (Peteraf &amp; Barney 2003) related to competitive advantage and “superior critical resources” (Peteraf and Barney, 2003: 316)</td>
<td>VPC-based decreasing cost or increasing WTP or both: (Peteraf and Barney, 2003)</td>
<td>Acquire and use superior critical resources under Williamsonian “first order” economizing (Peteraf and Barney, 2003)</td>
<td>Preserve value by preserving information asymmetry (Makadok and Barney, 2001)</td>
</tr>
<tr>
<td>IST</td>
<td>Efficient allocation of seller’s effort on productive activities and (possibly) asset maintenance</td>
<td>Allocation of effort to tasks that have value to the seller, the buyer, or both; price is a function of effort</td>
<td>Private activities by the seller to decrease the cost function of effort (i.e. cost per unit of effort), task synergies.</td>
<td>Effort by the seller in productive activities increases the value of current production to the buyer</td>
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Value creation

TCE centrally considers the costs of transacting, such as contracting costs, monitoring costs, and planning costs, outside of the costs of the product to be exchanged (Williamson, 1981). The primary means of value creation, therefore, is value preservation (Amit and Zott, 2001) through selecting an exchange governance form that avoids bureaucracy and waste (Williamson, 1991b).

PRT views the investments of the transaction partners into the asset being exchanged as the primary means of creating value (Grossman and Hart, 1986). The emphasis of changes in
ownership of property rights is to encourage investments (Hart, 1995), however the specific results of investment appear to be mathematically assumed (Hart, 1995: 43).

RBT shows that value is created “in the course of providing a good or service” (Peteraf and Barney, 2003: 314) and calculates it in the same way as VPC. This is unsurprising as two of the seminal statements of VPC come from refinement of RBT by Peteraf and Barney, (2003) and by Hoopes et al., (2003).

IST finds that value creation (EV) is based on efficient allocation of seller’s effort on productive activities and (possibly) asset maintenance. More abstractly, IST gives indications of a number of value creating tasks that may exist in any transaction. As an example, the asset-maintenance-based change in value of assets in the transaction could easily be extended to a change in productivity of human capital through learning during the transaction.

The second column in Table 1 shows a concise view of the basis for value creation from each of the four theories. I find that asset specificity is the primary basis for value creation in TCE. PRT describes value creation as (assumed) gains from trade developed by relationship-specific investment. In RBT, value creation is based on decreasing costs and superior differentiation based in “superior critical resources” (Peteraf and Barney, 2003: 316). IST shows that all of the seller’s effort produces value, but that value may not be accounted for in WTP-C.

Synthesizing these findings shows similarities on value creation from the four theories. In all cases, value creation has to do with the specificity, or fitness to purpose, of the exchanged artifact. In this sense, the fitness of a product for its purpose commonly drives at least part of its value, through increasing WTP. All of the theories also consider the cost (C) component of EV. RBT focuses on the cost of fitness somewhat more than TCE or PRT in discussing value creation, but, as I will show, all of the theories thoroughly consider means of controlling or
minimizing cost. RBT also tightly links the notions of competitive advantage and value creation, while TCE, PRT, and IST are less concerned with competitive advantage. IST differs slightly in that it views the buyer as knowing, ex ante, how the seller can provide value. The buyer arranges governance to incent the seller to engage in those activities. Nevertheless, IST views the seller’s efficient (cost minimizing) allocation of effort on specific tasks as the source of EV.

Abstracting further, I find that the theories may all accommodate a notion of \textit{value channels} in exchanges. Value channels are those components of transactions which have value that may be increased or decreased during the transaction (e.g. the artifact to be exchanged, the assets used to produce the artifact, human capital, raw materials). Through effort and investment, exchange partners may put value into available channels. In this sense, value creation is the effect of moving value from one channel to another. As a simple example, during cold weather, the value of warm air is high. Heating systems consume the value channel of fuel to produce the value channel of warm air. In this way, value in one channel is moved, as efficiently as possible, to another channel. Exchanges \textit{transfer} value from one channel to another, with a positive effect on the sum of overall value across all of the channels.

\textbf{Value capture}

The third column in Table 1 shows a cross-theory view of value capture. In TCE, bilateral dependence while avoiding opportunism is the basis for value capture. PRT finds that ownership (perhaps as the ultimate in bilateral dependence) supports value capture, but finds that absent asset ownership motivations, and under the assumption of information symmetry, the best either partner can do is the Nash bargaining solution. Value capture in RBT is more clearly distinguished between the buyer and the seller, perhaps due to its view of both partners as efficient-market price takers, with the buyer in a weak position of needing to increase his WTP.
in order to capture value, while the seller has the mechanism of lowering production costs. However, I note that the buyer in RBT, based on SFM logic, can avoid erosion of value by maintaining information asymmetry. Finally, I find that the IST notion of value capture is based on effort on tasks that naturally direct value to one or the other transaction partner.

In synthesizing these findings, I find that competition over the value produced by the transaction is strong between the buyer and the seller in all four theories, perhaps strongest in PRT with value capture issues preventing investment, rather than merely inhibiting it as in TCE. IST views value capture as rights arranged ex ante to the value created by specific kinds of tasks. In this sense, value capture in IST is a question of the proper allocation of effort among tasks. Information appears to be a critical component of value capture in both RBT and PRT.

More abstractly, considering the value channel notion above, value capture may be viewed as a partner’s ability, through ownership, contracting, or other means, to extract value from a value channel. Many transaction components partially or completely return to the control of the partner who contributed them to the transaction and bring their changed value back with them. The transaction may improve or degrade the productivity of a component (such as a productive asset or human capital), create a new component or artifact (such as the artifact to be exchanged or an intangible product such as knowledge), destroy a component (such as fuel used in transportation), or change the ownership of a component (the exchange price is a prime example). Both the change in value of the channel and the ex-post ownership of the channel matter in the amount of value captured. In this sense, an exchange partner’s ex post rights to one or more value channels represents the means of value capture. Such rights may be contractible or residual.
Cost Minimization

Cost minimization, in the fourth column of Table 1, is arguably the most consistent across the four theories. All four find that effort or funds are required to reduce costs and each mentions some notion of innovation. PRT and RBT most closely align with TCE’s “first order” economizing. Arguably, IST emphasizes task-level efficiency more than the other three theories. IST explains that cost minimization relies, in part, on synergies between tasks that the seller performs. In this sense, cost minimizing innovation is based on grouping synergistic tasks and incenting the seller to allocate effort to those groups of tasks.

In this synthesis, I find that effort spent in innovating cost saving steps and task assignments is the common cost-minimization theme among the theories.

Value Maximization

Value maximization, in the fifth column of Table 1, shows somewhat more variation than cost minimization. TCE indicates that relationship specific investment is the mechanism for increasing value. PRT includes the notion that innovations may be required to increase value. RBT, with its firm price-based separation of the buyer and the seller, along with the seller facing an aggregate demand curve, indicates that buyer value can only be preserved by bargaining tactics such as information hiding. IST relies on efforts by the seller in current production activities and possibly asset maintenance to create WTP.

My synthesis of these ideas indicates that RBT showed the most reactive value maximization strategy for the buyer and the least interplay between the seller’s efforts and the buyer’s value. TCE, PRT, and IST support the notion of seller’s efforts directly affecting buyer value within the transaction.
Adopting the value channel perspective above, I can craft a unified view of cost (C) minimization and value (WTP) maximization. Taking the view that value is transferred from one value channel to another during the exchange, I find that WTP and C may actually begin to merge into a broader, more abstract notion. Efficiency in the exchange is a broad sense of how much value in one channel increases per unit of value decrease in another channel. A decrease in value of some channels is recognized as a cost (C), while an increase in ex-post value of other channels is recognized as WTP. I note, however, that both partners have ex-post control of some channels and acquire value from them. In this sense, C represents those channels that lose value in the exchange while WTP may be more usefully considered the channels that gain value in the exchange. However, WTP is currently considered a buyer-only notion, while both the buyer and the seller consider value-gaining and value-losing channels in an exchange.

**Broader Commonalities among the Theories**

I find common economics-based themes across the four theories. They all utilize some version of (incomplete) contracting, ownership of (rights to) assets, “far-sighted” (Williamson, 1998) managers who plan to create and capture value, and the notions of value creation and capture themselves. However, as expected, each theory focuses on a slightly different nuance of exchange transactions. I take the view that continued synthesis of commonalities and contrast of differences, at increasingly detailed levels, may produce an overall theory of value creation and capture in transactions in line with existing research efforts (Gibbons, 2005; MacDonald and Ryall, 2004; Mahoney and Qian, 2013; Ryall, 2013).

**Discussion and Implications**

I submit a short analysis of some implications of the value channel view for one of the theories, TCE. A defining feature of TCE is its explanation of markets, hybrids, and hierarchies.
If I apply value channel thinking to these different governance forms, I find some possible implications.

   In a (perfect) market, available value channels and changes in their ownership are strictly limited. This is the value channel interpretation of the notion of arm’s-length exchange. By convention, a (perfect) market has only two value channels: the asset to be exchanged and the price paid. Other value channels, such as shared ownership of productive assets, violate this definition of a market. In this sense, I posit that different governance structures operate by enabling different value channels.

   A hierarchical exchange also tends to limit the value channels in the exchange. Once the seller becomes an employee of the firm, ownership of some value channels (productive assets as a prime example) is no longer available. At the extreme of hierarchical forms, an exchange provides only one value channel to the employee: salary. All other value channels are owned by the firm. Efforts to incent the employee usually involve additional value channels, with a commission or piece-rate bonus as prime examples. However, this incentive comes at the price of a (implied) share of ownership in the residual rights to production or a contractible right given to the employee, thus moving away from a (pure) hierarchy.

   In contrast to both of these forms, hybrid forms broaden the ability of the partners to create and exchange value channels. As an example, a relationship between the buyer and the seller may have value later in the transaction. Such a value channel is strictly excluded in (perfect) markets and is considered of little importance in (extreme) hierarchical forms in which the employee is a drone who does whatever the employer desires with no thought (Gibbons, 2005). From this perspective, I view hybrid forms as being capable of supporting and managing many types of value channels and many creative ways to exchange ownership of those channels.
As an example, in a hybrid transaction, the seller’s employees may work side-by-side with the buyer’s employees to understand a unique need and tailor a solution for the buyer. Both sets of employees increase their knowledge of the problem domain and the (presumably technological) solution space. Based on this greater knowledge, both sets of employees are likely to be more productive in future efforts. In this way, value is placed in both value channels. It is likely that the transaction partners capture at least some of this value through employees returning with enhanced productivity based in their new knowledge. However, ownership matters as the employees are considered to be able to change employers, taking their valuable knowledge with them.

Of the many broad features outlined in all four theories, bargaining, in particular, deserves attention due to its prominence in the theories and its effect on the notion of value channels.

In TCE, bargaining and opportunism blend together as the transaction partners vie for value capture opportunities. In IST, the agent opportunistically shirks, applying effort to tasks that have no value to the principal rather than those that do, whenever possible. In RBT, a seller who understands the eventual value of the asset sets price equal to that value, thus capturing all of the value in the exchange. In PRT, one partner will not make a value-increasing investment because the other partner will effectively bargain for half of the value created by that investment.

All four of the theories attempt to address means of controlling this aspect of transactions, through ownership (PRT), information asymmetry (RBT), incentive alignment (IST), or governance and contracting (TCE). In addition, recent research on the Value Capture Model (VCM) (MacDonald and Ryall, 2004; Ryall, 2013), defines competition and bargaining as the only two forces that drive value capture in exchanges.
I posit that the notion of value channels casts bargaining somewhat differently: as offers to exchange rights to value channels. I show an example from market governance. In a (perfect) market exchange, I propose that, by definition, only two value channels exist: the product and the price. Ex ante, the transaction partners intend to exchange ownership of the product, owned by the seller, for a value channel of money, owned by the buyer. Ex post, the product is owned by the buyer and the money is owned by the seller. The product is realized ex ante and has all of the properties it will ever have. Its price is set by supply and demand and information symmetry exists. The buyer places a market-determined amount of value in the money channel. At the execution of the transaction, ownership of the channels is exchanged. Slightly relaxing the (perfect) market restriction on bargaining in this example, I can show a different view of bargaining between the transaction partners. The product is realized and fixed, by assumption. The partners know that, if the transaction takes place, the product value channel will be exchanged for the money value channel. In this sense, bargaining is setting the amount of value in the money channel that will allow the exchange to take place to the satisfaction of both partners.

I feel that a broader understanding of the creation, ownership, and transfer of value channels may aid this huge body of research into how firms bargain for value and the implications of that bargaining on the creation of value. In that sense, I hope that a diverse set of research channels find this notion valuable, in addition to the TCE, RBT, PRT, and IST literatures.

As I anticipated, the concepts of value creation, value capture, cost minimization, and value maximization are somewhat larger and more nuanced than each theory alone explains. Therefore, I develop some analysis questions: Does the union of the four facets of value creation
cause any confusion of assumptions? Do the theories have common fundamental assumptions around these concepts that can be relaxed to find commonalities among the theories or common terms that should be disambiguated to avoid equivocation when comparing theories? Do two or more of theories: 1) Differ in their explanation and prediction of outcomes in a situation of common interest (e.g. information - the notion of information asymmetry appears in RBT explanations of value creation (EV) and maximization (WTP), but information symmetry is an assumption of value capture in PRT), so can research now address that situation with a new approach? 2) Offer rival explanations for the same phenomenon (e.g. value is created by gains from trade in PRT, but that language is not common in the other three theories). 3) View the construct from the same perspective (e.g. across the theories, the notion of cost minimization is expressed in very similar language).

**Conclusion**

In this paper, I set out to develop an inclusive “crude look at the whole” (Gell-Mann, 1995: 346) of value creation and capture by applying a VPC lens to well-known Strategic Management theories of exchange. I developed an understanding of how each theory views value creation and capture through analysis of each theory’s different concepts of value (WTP), price, and cost, along with the derived quantities of value creation (EV), and value captured by each exchange partner. I synthesized each concept across the four theories, thereby developing the notion of value channels. I view value channels as 1) holders of the value created by effort and investment and 2) carriers of value to the transaction partner who has rights to those channels via contract or ownership. In this way, I have developed a level of abstraction which, I believe, applies to each theory, as evidenced by the value channel analysis of governance form in
TCE. Further, I have shown that value channels address “big picture” issues of exchange such as bargaining and opportunism.

**Future Research**

I note that this view is, in fact, crude, in the sense of imprecise, and in need of much further refinement and validation. However, I am encouraged to note that the value channel view of exchange appears to align well with outstanding current research by scholars such as: Gibbons (Baker, Gibbons, and Murphy, 2008; Gibbons, 2005); Ryall (MacDonald and Ryall, 2004; Ryall, Montez, and Ruiz-Aliseda, 2013); and Mahoney (Kim and Mahoney, 2010; Mahoney and Qian, 2013). I conclude by suggesting a few additional broad ideas for future research.

There are many possible value channels; in fact, at present the concept is abstract enough to include almost anything. Research in identifying and measuring some specific value channels would add credibility to the idea. One possible area is formal modeling of the value channel concept. In this sense, I note that both PRT and IST have formal presentations. If the value channel notion is an accurate representation of exchange, I should be able to find it in both formulations. Research could extend the notion of “one exchange, one amount of value” to find equalities in those formulations and model the creation and exchange of value.

Another possible area of research is empirical validation of value creation and capture in actual exchanges. In this sense, research could extend the TCE-value channel reasoning in this research to develop empirical evidence that governance form in exchanges influences not only value capture, but also value creation. Such research may address the question: Do similar transactions under different governance forms simply divide value differently, or do they create differential amounts of value?
Finally, I feel that this research closely ties to the VCM literature (Gans, MacDonald, and Ryall, 2009; MacDonald and Ryall, 2004; Ryall et al., 2013). VCM explains that transaction partners capture an amount of value at least equal to their next best transaction option. However, research is still proceeding in understanding how any additional value may be captured by one or the other partner. The value channel view may show that the transaction partners rely on a set of value channels, rather than simple bargaining, to divide this additional value. Such research might address the following research question: Do value channels in potential transactions align with the value channels in current transactions, allowing comparison of transactions on an equal basis, or will transactors abstract to a financial amount of value and ignore the sources?

Additional analysis will show whether the theories actually arrive at different conclusions from the same starting point, or at the same conclusion following a different path of reasoning. In addition, some definitions emphasize that value is a result of firm operations (Besanko, Dranove, and Shanley, 1999; Ghemawat, 1991, 1999; Porter, 1980) whereas other definitions relate value to ownership of a resource (Barney, 1986, 1991; Lippman and Rumelt, 2003). The expected findings of this research contribute to strategy literature by clarifying the foundational concepts of value creation and capture that are expressed across core strategy theories and identifying avenues for future research.
Chapter 2 References


Chapter 3. Hybrid Governance and Property Rights: A Formal Model

Introduction

Scholars have identified many types of organizational form that are neither market nor hierarchy (Hennart 1993; Williamson 1991a; Ebers & Oerlemans 2013; Ménard 2004) and have found that such hybrid forms correspond with the transaction cost economics (TCE) formulation of transaction governance (Williamson 1985; Williamson 1991b). TCE explains the transaction conditions under which market governance is inefficient and how firms organize such transactions with hybrid governance forms that are neither market forms nor hierarchical forms that exist within the firm. However, TCE is not the only theory that attempts to explain how firms select efficient transaction governance forms. Property rights theory (Hart 1995, “GHM” hereafter; Hart & Moore 1990; Grossman & Hart 1986) models investment by both transaction partners and explains that ‘joint efforts’ are inherently less efficient than integration by one of the transaction partners (Hart 1995). In this way, these two theories predict different efficient governance forms for certain types of transactions that would fail under either a pure hierarchy or a pure market: TCE predicts hybrid forms, whereas GHM predicts integration.

Recent research into the incentive properties of transaction governance (Makadok and Coff, 2009) has further developed the Incentive-Systems Theory (IST), which may provide a means of resolving this theoretical tension. IST identifies three independent dimensions of difference between a market and a hierarchy (asset ownership, incentive intensity, and authority) and explains that, while intermediate forms clearly exist in which both partners jointly share authority, ownership, rewards, and risks (effectively part-hierarchy and part-market on all
dimensions), TCE *hybrid* forms are better explained as having properties of markets on some distinct dimensions and properties of hierarchies on other distinct dimensions. Since GHM was developed prior to this newer understanding, it appears to view such inefficient ‘joint efforts’ as the only type of *intermediate* forms that are possible. Therefore, in this research I develop a model of value creation-and-capture in transactions that considers both the more-detailed definition of hybrid forms (from IST) and the simultaneous investment by both transaction partners (from GHM) and thus seek to resolve the tension between the differing explanations of efficient transaction governance advocated by the TCE/IST tradition and GHM. This research engages with and answers a need to integrate hybrid forms with existing theories of exchange (Gibbons 2005b).

In order to resolve the different explanations, I use the Value-Price-Cost framework (Hoopes et al. 2003; Peteraf & Barney 2003 “VPC” hereafter; Tirole 1988) to show that, for a single transaction, one total amount of value is created, one part of this value is captured by the seller (whether as a sales price, a commission, or a side payment), and the rest of the value is captured by the buyer when the transacted item is put to its best use. Since both GHM and IST formally model the total value created for a given transaction, my approach sets the equations that characterize this value creation to be equal to one another (since they both predict the same amount of value created) and thus derives a formal model that encompasses both the GHM and IST formulations of value capture.

The resulting model shows value channels for each partner, and thus theoretically confirms the concept as developed in the synthesis in Chapter 2. Each partner contributes value channels to the transaction, ex ante, and takes away value channels through ownership and
contract, ex post. In this way, the model stands as a formal basis for the value channel concept and thus contributes to that nascent research stream.

In addition, by showing that GHM and IST are describing the same value creation-and-capture phenomenon through different lenses, I seek to contribute to a growing research stream that attempts to find commonalities between the various perspectives that are used to explain how firms organize to create and capture value from transactions (Gibbons 2005a; Mahoney & Qian 2013; Nickerson et al. 2012). This research also contributes to the value creation and capture literature (Tirole 1988; MacDonald & Ryall 2004; Peteraf & Barney 2003; Hoopes et al. 2003) in showing how transaction-governance form influences not only value capture, but value creation. Finally, this research provides a simple but robust mathematical model of value creation and capture that will serve as the underlying theory for generating testable propositions from empirical data.

Theory Development

In this section, I first review the application of IST and GHM to determine the efficient governance form for transactions. I then outline the theoretical findings for IST and GHM and conclude this section by showing the features of each theory that support the development of a unified formal model.

Theories of the boundary of the firm have been used to study make-vs.-buy sourcing decisions in practice; in particular, TCE is the dominant theoretical lens for such studies (for an extensive review, see Macher & Richman (2008)). A current debate rages in the literature, however, over whether the mixed empirical success of these studies (and, by extension, of TCE) in explaining the variation in performance is simply due to misapplication of the theory
(Alaghehband et al. 2011) or due to the notion that the “outsourcing phenomenon is more complex than can be accommodated by one decision-making theory [TCE]” (Lacity et al. 2011). This debate currently posits two recommendations: to more faithfully apply TCE in the structuring of empirical propositions, or to develop a specific theory of outsourcing that incorporates both characteristics of the transaction structure and the individual incentives to invest in its success.

I sympathize with both views, agreeing that the informal text-based presentation of TCE (Alaghehband et al. 2011; Whinston 2001) allows for its misapplication. I also feel, however, that efforts should be made to apply the most recent TCE scholarship (rather than being restricted to the 1975 original material) prior to abandoning acclaimed firm-boundary theories altogether. I further believe that supplementing TCE with the structure of the transaction and specific elements of incentives by its participants will enrich the description of outsourcing as a make-vs.-buy phenomenon and lead to clearer understanding of its dynamics. I begin this effort by submitting that many complex asset-acquisition transactions have two prominent features: (a) a focus on intangible, non-contractible investment by both parties, and (b) complex task-performance incentive structures that transfer surplus from one party to the other based on their contributions to value creation.

**TCE and IST**

TCE is essentially a theory of transaction governance, with its unit of analysis as the transaction – the transfer of assets or efforts across organizational boundaries (Argyres 2010). TCE logic suggests that transactions can be governed according to one of three primary types: markets, hybrids, or hierarchies, representing a discrete choice selected to minimize transaction costs (Ménard 2010). The intent of TCE is to match the governance form to the properties of the
transaction in order to overcome transaction partners’ aversion to *ex ante* noncontractible investment that, after its cost is sunk, exposes the investor to opportunism by the other transaction partner (Klein 2010). Under neoclassical economic assumptions such as perfect information and perfect competition, an efficient market would be expected to have the lowest transaction costs. Transactions that require investment, are uncertain, and occur infrequently may require a more complex form of governance such as hierarchy (within the firm) or hybrid (such as franchising, alliances, or piece rate employment) (Williamson 1979; Williamson 1991a).

Within the TCE framework, investment (whether of capital or effort) is an important determinant of efficient governance form to the degree that the investment is transaction- or relationship-specific, meaning that the investment loses a significant portion of its value if the investor is forced to transact with a different partner than the one to which she customized the investment. Because of the threat of this loss, the investor can be manipulated (‘held up’) and some or all of the value produced by the (unilateral) investment can be acquired by the non-investing transaction partner through the implied threat of relationship dissolution. In its recognition of hybrid forms, TCE suggests that transaction partners find governance forms for complex transactions that protect against such opportunism. The core TCE theory, however, does not attempt to align specific hybrid forms with specific transaction properties, and thus cannot precisely identify a hybrid form that is efficient in every context. TCE does predict that extreme forms such as pure markets and pure hierarchies will not protect against opportunism, and thus be inefficient, which will encourage transaction partners to utilize generic hybrid governance forms.

IST (Makadok & Coff 2009) develops a taxonomy of hybrid forms based on three orthogonal dimensions that distinguish the market from the hierarchy based on whether internal
or external organizational techniques are used to coordinate the activity. Indeed, the dimensions align with those the IRS uses to distinguish between employees and contractors: ownership of the productive assets, productivity incentives, and the level of the principal’s authority over how the work is performed. These hybrid forms are distinguished from ‘intermediate’ forms in which the dimensions are not orthogonal and thus all three are expected to vary together on a single continuum between market and hierarchy. As an example, IST identifies piece-rate employment as a hybrid form in which the principal owns the productive assets and exerts strong authority over the work, but (unlike in pure hierarchy) the agent has strong productivity incentives because their wage is directly tied to measurable output. IST thus identifies six hybrid forms in addition to the ‘pure’ forms of hierarchy and market.

Further, IST considers the conditions under which a specific governance form, from the identified set of eight, can be expected to be most efficient. IST develops three generic task types, one that can be motivated by each dimension of the hybrid ‘space’, and considers a fourth task type – the liverless task. The liverless task is a non-contractible task which is important to the success of the transaction, but has no direct motivational lever; to make the transaction efficient, the agent must ‘invest’ in effort on the liverless task without direct motivation. To give an example, asset maintenance can be motivated by assigning a share of ownership of the asset to the agent, so the agent can be incented to maintain the asset through the increased value of a well-maintained asset. On the other hand, cooperation with other suppliers is seen as a task that cannot be directly motivated, due in part to presumed measurement difficulties (Makadok & Coff 2009), but overall transaction efficiency (value creation) is nonetheless improved by effort on this liverless task. IST posits that, for a specific agent and task set, each task is more or less synergistic with every other task (including the liverless task) and that these synergies act to both
motivate effort on the liverless task and supplement direct motivations for the other three tasks. The most efficient hybrid-governance form is the one which motivates the tasks that the agent finds are synergistic with the liverless task, thereby creating indirect incentives for the agent to invest in this task which adds to the overall value created even though she does not directly capture this value. In this way, IST precisely matches the efficient hybrid form to the properties of the transaction and the specific agent. For transactions in which only agent investment matters, this level of customization is sufficient. IST’s “single causal mechanism” (Makadok & Coff 2009, p.313) does not, however, consider the value creation-and-capture effects of investment by the principal in its process of determining the efficient governance form. Therefore, IST cannot precisely specify an efficient hybrid form for transactions in which investment by the principal matters.

GHM

Grossman, Hart, and Moore (Hart 1995; Hart & Moore 1990; Grossman & Hart 1986) created a research stream into the incentive properties of ownership and property rights in order to remedy the perceived incentive weaknesses of TCE as an overall theory of the firm (Hart 1995). In the words of Hart (1995), “If there is less haggling and hold-up behavior in a [hierarchy], it is important to know why. Transaction cost theory, as it stands, does not provide the answer.” (Hart 1995, p.28, emphasis in original). GHM proceeds with a formal model of a transaction in which both partners have the option to make an ex ante non-contractible investment that will increase the value created through the transaction and thus improve the overall economic efficiency and the payoff to each transaction partner. GHM finds that the investing partner will bear all of the costs of creating the additional value, but will have to share
that value with the non-investing partner, thus neither partner will actually invest due to the fear that the other partner will not.

GHM demonstrates that under incomplete contracting (a natural extension of the theory of bounded rationality (March 1978; Simon 1972)) asset usages not specified in the contract revert to the control of the assets’ owner. Resolution of a transaction under an incomplete contract is thus intertwined with the ownership structure of the assets needed to complete it (Aghion & Holden 2011). Unified ownership of the assets (e.g., via integration of the partner firms) promotes efficient *ex ante* investment in the transaction. Therefore, according to GHM, the answer to the lack of investment in this scenario (absent perfect *ex ante* coordination, which is the most efficient) is for the firms to integrate – the transaction partner with the most effective contribution -- whether human assets, productive assets, or investment -- buys the relevant assets of the partner firm and, having acquired them, makes the investment and effort decisions for both sides of the transaction. Such integration allows the investor to acquire all of the value produced by the investment, making the investment more attractive and more probable. GHM makes the strong assumption that both firms are sufficiently wealthy in order for integration in either direction to be practical (Hart 1995, p.35). Further, GHM views hybrid-governance forms as joint ventures where the combined productive assets are owned jointly by both partners. Under such a view, hybrid governance forms are found to be less efficient than integration (Hart 1995, p.48). This partial ownership by each party corresponds to the *intermediate* form identified by IST (Makadok & Coff 2009), rather than the IST *hybrid* forms in which the productive assets can be owned solely by either transaction partner. For these reasons, although GHM offers a context for two-sided investment in either contract-based or integrated settings, it cannot precisely specify an efficient governance form for hybrid transactions.
The Enterprise Systems Context

The incidence of firms acquiring (rather than internally developing) complex assets and engaging in the associated complex transactions has seen a dramatic increase with the advent of Enterprise Systems (ES). Such investments in information systems have a substantial role in the overall strategy of the organization (Drnevich & Croson 2013). The 2011 market for the corporate acquisition of ERP systems (a subset of ES) alone was estimated at $45.5 billion (Forrester 2011). The fact that ES acquisition transactions are commonly executed unsuccessfully is shown by both the post hoc legal activities of the parties to the transaction (Holland & Light 1999; Koh et al. 2008) and the extensiveness of IS research into causes of acquisition transaction failure (Brown 1997; Keil & Flatto 1999; Mähring & Keil 2008; Keil et al. 2003; Sambamurthy & Zmud 1999; Xue et al. 2008). The frequency and severity of transaction failure in the ES domain sets the stage for this present research extending theories of transaction governance. The temporary nature of the ES acquisition transaction also militates against expensive (firms may not actually be ‘wealthy’) and relatively permanent (Kim & Mahoney 2006) integration in order to allow efficient governance of the transaction.

The transaction to acquire a complex IT asset can be modeled as an exchange agreement between two firms. The seller contracts to deliver a system that meets the buyer’s needs; the buyer pays the seller both for the base system and the seller’s effort in customizing the system to the buyer’s needs and, after the seller has invested effort in customization, receives the customized system and puts it to use. In this research, I consider the acquisition transaction to end with the acceptance of the system by the purchaser, although other contracts for system maintenance or other systems may follow. I view the acquisition transaction as temporary or short-term relative to ongoing agreements for (e.g.) raw materials or component parts for a
production process. Once the system is delivered, the transaction is thus complete and its value can be determined.

IS research studies the delivery of complex IS assets such as ES (Barua et al. 2004; Grover & Malhotra 2003). This research finds that vendors begin with software platforms that meet the “average” needs of a class of purchaser (typically based on the industry of the purchasing firm, but not any firm-specific characteristics) and then customize the software to the particular needs of the specific buyer (Swan et al. 1999; Wagner & Newell 2004). The amount of modification varies, but is often significant compared to the base capabilities of the system (Gattiker & Goodhue 2005). However, the relative success of such efforts is poor (Liang et al. 2007), in part due to high levels of risk (Keil et al. 2008; Keil et al. 2000; Raz et al. 2002; Tah & Carr 2000). Acquisitions of multimillion-dollar ES are infrequent, uncertain, and highly specific transactions, in the sense that little of the customization effort (to make the software more useful to the buyer firm) is reusable in other customization efforts (Wang et al. 1997). Governance of the complex transactions involved thus represent boundary cases for the application of market theory and internal hierarchical management, stretching the conception of the make-or-buy decision represented in organizational economics.

This section highlights features of TCE, IST, and GHM that will be useful in a model that is applicable to the ES acquisition context. For the ES acquisition context, I consider IST as an extension of TCE that more precisely identifies hybrid governance forms that are efficient in specific transactional contexts, although Makadok & Coff (2009, p.311) find that IST predictions differ from those of TCE. For this reason, the following analysis will focus on the combination of IST and GHM without reference to TCE directly.
To conclude this section, I offer a brief recap of the similarities between IST and GHM that argue in favor of their combination in the formal model. First, I note that complementarities have been found by scholars between GHM and TCE (as the precursor to IST) “the modern property rights theory [GHM] complements extant agency theory and transaction costs theory by introducing ownership concepts in an incomplete contract setting, and emphasizing relation-specific assets (both physical and human asset specificity)” (Kim & Mahoney 2005, p.227, emphasis in original).

GHM mathematically expresses the results of a unilateral investment by either party, finding that investment levels are generally lower than those that would be observed under perfect coordination or integration: since a party will bear the entire cost of the investment, but will need to share the proceeds with the transaction partner, each partner’s motivation to invest is lower. The IST finds that ownership motivates investment in asset maintenance due to a share of the final value of the asset. So, both models consider incentives to invest in a transaction. Further, both models consider the division of surplus and the costs of creating surplus. So it is at least plausible that the GHM model could be extended to incorporate the IST.

Further, IST and GHM both consider the transaction as the unit of analysis, utilize incomplete contracting as a theoretical base, and consider non-contractible effort as critical to the maximum efficiency of the transaction. In both models, the transaction partners are considered to be firms or individuals that contribute their human resources and owned assets to the transaction, at least for the short term. Both systems find that the method of allocating the proceeds from the transaction (whereby the sellers gets paid on delivery and the buyer collects value from the asset’s use) encourages the partners to make investment decisions that are individually optimal, although perhaps not globally optimal.
For these reasons, I posit that the combination of IST’s thorough identification of solely-owned hybrid forms fits neatly with GHM’s meticulous treatment of bilateral investment. Further, a combined model that incorporates both buyer and seller investment can take advantage of GHM’s focus on the relationship between the transaction and the ‘pure’ market while also incorporating IST’s attention to the heterogeneous motivations of a specific agent (here, the seller or agent⁴) presented with a specific task set. In the following section, I discuss the specific points of integration and develop the combined formal model.

**Integration of GHM and IST**

This section will compare and contrast GHM (Hart 1995) with IST (Makadok & Coff 2009) using compatible concepts for *ex ante* investments, costs, value produced, negotiating positions, and division of value from the transaction. Specific instances of the models can be found in the IST (Makadok & Coff 2009, p.306) and in GHM (Hart 1995, p.34).

As an example of the proposed means of synthesis of the IST and GHM, consider the fact that both studies model the post hoc financial payoffs to the transaction parties based on similar assumptions. In the IST (Makadok & Coff 2009, p.306, Eq. (1)), the principal’s payoff (P) is a function of the (market) value of current output (X), change in productive asset value (Y), value of the liverless task (W) and the transfer cost (s). Therefore:

\[
P = f(X, Y, W, s)
\]

⁴ GHM and IST use the terms “buyer” and “seller” to represent the “principal” and “agent” respectively. In describing each theory, I have attempted to remain faithful to that usage. In the remainder of the paper, the words “buyer” and “principal” are used interchangeably, as are “seller” and “agent”. This reflects the integration of the two theories.
In GHM (Hart 1995, p.39, Eq. (2.4)), the buyer’s payoff ($\pi_1$) is a function of revenue and cost if the transaction succeeds $(R,C)$, revenue and cost if the transaction does not succeed $(r,c)$, and the spot price of acquiring a non-customized input ($\bar{p}$). Therefore:

$$\pi_1 = f(R, C, r, c, \bar{p})$$

For a single transaction, there is only one realized payoff to the buyer (or principal), therefore: $P = \pi_1$ and

$$f(X, Y, W, s) = f(R, C, r, c, \bar{p})$$

Meaning that it may be possible in the synthesis to show that the (market) value of current output $(X)$, the change in productive asset value $(Y)$, value of the liverless task $(W)$, and the transfer cost $(s)$ are theoretically related to the revenue and cost if the transaction succeeds $(R,C)$, revenue and cost if the transaction does not succeed $(r,c)$, and the spot price of acquiring an uncustomized asset ($\bar{p}$).

The seller’s (or agent’s) payoff is modeled similarly in both GHM and the IST. In the IST (Makadok & Coff 2009, p.306, Eq. (2)), the agent’s payoff $(A)$ is a function of the transfer cost or sale price of the asset $(s)$, change in productive asset value $(Y)$, value of the agent’s personal activities $(Z)$, and the agent’s private cost of effort $(C(t))$. It is important to note that IST models the transfer cost as a function of the value of the asset to the principal; thus $s=f(X)$. Therefore,

$$A = f(s, Y, Z, C(t))$$
In GHM (Hart 1995, p.39, Eq. (2.5)), the seller’s payoff ($\pi_2$) is again a function of revenue and cost if the transaction succeeds ($R,C$), revenue and cost if the transaction does not succeed ($r,c$), and the spot price of acquiring an uncustomized input ($\bar{p}$). Therefore:

$$\pi_2 = f(R, C, r, c, \bar{p})$$

As above, for a single transaction, there is only one realized payoff to the seller (or agent), therefore: $P = \pi_2$ and

$$f(s, Y, Z, C(t)) = f(R, C, r, c, \bar{p})$$

Meaning that it may be possible in the synthesis to show that the agent’s payoff ($A$) is a function of the transfer cost ($s$), change in productive asset value ($Y$), value of the agent’s personal activities ($Z$), and the agent’s private cost of effort ($C(t)$) and theoretically related to the revenue and cost if the transaction succeeds ($R, C$), revenue and cost if the transaction does not succeed ($r, c$), and the spot price of acquiring an uncustomized input ($\bar{p}$).

In addition to the equalities above, there are other similar values in the two formulations. These values are listed in Table 2.

<table>
<thead>
<tr>
<th>Value in the IST</th>
<th>Value in GHM</th>
<th>IST symbol</th>
<th>GHM symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal’s payoff</td>
<td>Buyer’s payoff</td>
<td>P</td>
<td>$\pi_1$</td>
</tr>
<tr>
<td>Agent’s payoff</td>
<td>Seller’s payoff</td>
<td>A</td>
<td>$\pi_2$</td>
</tr>
<tr>
<td>Market value of current output</td>
<td>Revenue if the transaction succeeds</td>
<td>X</td>
<td>R</td>
</tr>
<tr>
<td>Agent’s cost of effort</td>
<td>Cost if the transaction succeeds</td>
<td>C(t)</td>
<td>C</td>
</tr>
</tbody>
</table>
Principal’s payoff:

\[ \pi_1 = r - \bar{p} + f_{\pi_1}(G) \]  

Equation 1 is a restatement of Hart, p., Eq. (2.4) (1995, p.39, Eq. (2.4)), where \( f_{\pi_1}(G) = \frac{1}{2}[(R - C) - (r - c)] \), indicating the possibility of a more general division of the “gains from trade”, \( G \). Equation 1 states that the principal’s payoff from a completed transaction to acquire a customized asset is equal to the payoff from an uncustomized asset transaction plus the principal’s share of the marginal gains from a transaction that produces a customized asset.

Agent’s payoff:

\[ \pi_2 = \bar{p} - c + [G - f_{\pi_1}(G)] \]  

Equation 2 is a restatement of Hart, p., Eq. (2.4) (1995, p.39, Eq. (2.4)), where \( f_{\pi_1}(G) = \frac{1}{2}[(R - C) - (r - c)] \), again, indicating the possibility of a more general division of the “gains from trade”, \( G \). Equation 2 states that the agent’s payoff from a completed transaction to produce a customized asset is equal to the payoff from an uncustomized asset transaction plus the agent’s share of the marginal gains from a transaction that produces a customized asset.

In IST, the gains from trade, \( G \), are stated differently:

\[ G = P + A = X + Y + p_3W + a_4Z - C(t) \]  

(eq.1 + eq.2 in Makadok & Coff (2009)  (3)
and divided differently, with $f_{\pi_1}(G)$ representing the principal’s payoff and $f_{\pi_2}(G)$ representing the agent’s payoff:

$$f_{\pi_1}(G) = P = X - s + (1 - a_2)Y + p_3W$$

(eq.1 in Makadok & Coff (2009)) (4)

$$f_{\pi_2}(G) = A = G - f_{\pi_1}(G) = s + a_2Y + a_4Z - C(t)$$

(eq.2 in Makadok & Coff (2009)) (5)

Equation 3 states that the economic gain, $G$, from a customized asset transaction is the sum of the principal’s payoff, $P$, and the agent’s payoff, $A$. It further sums the models of $P$ and $A$ found in IST. Equation 4 (equation 5) puts the principal’s (agent’s) payoff, $P$ ($A$), in terms of a share of gains from a customized asset transaction.

Substituting (4) into (1) and (5) into (2) results in:

$$\pi_1 = r - \bar{p} + X - s + (1 - a_2)Y + p_3W$$

(6)

$$\pi_2 = \bar{p} - c + [s + a_2Y + a_4Z - C(t)]$$

(7)

Equation 6 (equation 7) states that the principal’s (agent’s) payoff is equal to the payoff from an uncustomized asset transaction, as stated in GHM, plus the principal’s (agent’s) share of the marginal gains from a transaction that produces a customized asset, as stated in IST.

Further, in the spirit of GHMs investment by the principal and assuming that the principal can make a non-contractible investment in, say, marketing the final product, $X$ becomes a
function of that investment: X(i). In addition, s (as a function of X: s=f(X), from above) also becomes a function of i: s(i). Finally, the principal has a cost of investing, which we model as k(i). Substituting back into (6) and (7), results in:

$$\pi_1 = r - \bar{p} - k(i) + [X(i) - s(i)] + (1 - a_2)Y + p_3W$$ (8)

Equation 8 states that the principal’s payoff is equal to the payoff from an uncustomized asset purchase, $r - \bar{p}$, plus the principal’s share of the marginal gains from a transaction that produces a customized asset, $[X(i) - s(i)] + (1 - a_2)Y + p_3W$. It includes the refinement that the final value of the exchanged asset, X, and, thus, the transfer cost, s, are functions of a noncontractible investment by the principal, i.

$$\pi_2 = \bar{p} - c + s(i) + a_2Y + a_4Z - C(t)$$ (9)

Similar to eq. 8, eq. 9 states that the agent’s payoff is equal to the payoff from an uncustomized asset sale, $\bar{p} - c$, plus the agent’s share of the marginal gains from a transaction that produces a customized asset, $s(i) + a_2Y + a_4Z$, less the cost of the agent’s effort to produce the customized asset, C(t). It includes the refinement that the transfer cost, s, is a function of a noncontractible investment by the principal, i.

In addition to the principal’s investment, i, the agent also invests effort and assets into the transaction. This is modeled in GHM, (2.10 & 2.11, p. 40 in Hart 1995), in which the agent’s cost is a function of the effort, e, and assets, B, which the agent contributes to the transaction. In addition, GHM shows that the value of the asset, r, is a function not only of the principal’s investment, i, but also of the assets the principal contributes to the transaction, A.
GHM sets up the payoffs net of investment costs and includes the investments and assets. I mirror this treatment:

\[
\pi_1 = r(i; A) - \bar{p} - k(i) + [X(i) - s(i)] + (1 - a_2)Y + p_3W \tag{10}
\]

\[
\pi_2 = \bar{p} - c(e; B) + s(i) + a_2Y + a_4Z - C(t) \tag{11}
\]

To place a greater emphasis on \(i\) and \(e\) as the investment decisions by the buyer and seller respectively, seller’s payoff and buyer’s payoff can be expressed as indirect functions of these decision variables:

\[
\pi_1 = r(i; A) - \bar{p} - k(i) + [X(i, e_1) - s(X(i, e_1))] + (1 - a_2)Y(i, e_1) + p_3W(e_1) \tag{12}
\]

Where the symbols represent the quantities in Table 3:

**Table 3: Quantities in the model of seller payoff**

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\pi_1)</td>
<td>Payoff to the buyer/principal (“buyer”). Defined as value (willingness to pay) less exchange price.</td>
</tr>
<tr>
<td>(i)</td>
<td>Investment by the buyer – assumed to be the same for an uncustomized product or the customized product</td>
</tr>
<tr>
<td>(A)</td>
<td>Set of assets owned solely by the buyer and used to obtain value from an uncustomized product</td>
</tr>
<tr>
<td>(r(i; A))</td>
<td>Value to the buyer of a transaction using an uncustomized product, defined as willingness to pay</td>
</tr>
<tr>
<td>(\bar{p})</td>
<td>Price of an uncustomized product. Both parties are price-takers, so they cannot influence this quantity</td>
</tr>
<tr>
<td>(k(i))</td>
<td>Cost of the investment (i) to the buyer</td>
</tr>
<tr>
<td>(e_1)</td>
<td>Effort by the seller/agent (“seller”) to create the customized product</td>
</tr>
<tr>
<td>(X(i, e_1))</td>
<td>Value ($) of the customized product to the buyer</td>
</tr>
<tr>
<td>(s(X(i, e_1)))</td>
<td>Exchange price of the customized product as a commission or percentage of the value of the product</td>
</tr>
</tbody>
</table>
In short, equation 12 includes the cost of the principal’s investment and includes the effect of the agent’s effort to create a customized product, $e_1$, on 1) the value of the final product, $X$, 2) the final value of the assets used in the transaction, $Y$, and 3) any private value to the principal from the agent’s effort on the liverless task, $W$. This follows intuition in that the payoff to the buyer is the payoff of acquiring an uncustomized product $[r(i; A) - \bar{p} - k(i)]$ plus a premium benefit representing the additional value of a customized product

$$\left[ [X(i, e_1) - s(X(i, e_1))] + (1 - a_2)Y(i, e_1) + p_3W(e_1) \right].$$

And:

$$\pi_2 = \bar{p} - c(e_0; B) + s(X(i, e_1)) + a_2Y(i, e_1) + a_4Z(e_1) - c(e_1 - e_0) \quad (13)$$

Where the symbols represent the quantities in Table 4:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\pi_2$</td>
<td>Payoff to the seller/agent (“seller”)</td>
</tr>
<tr>
<td>Symbol</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>$\tilde{p}$</td>
<td>Price of an uncustomized product. Both parties are price-takers, so they cannot influence this quantity.</td>
</tr>
<tr>
<td>$e_0$</td>
<td>Effort by the seller to create an uncustomized (uncustomized) product</td>
</tr>
<tr>
<td>$B$</td>
<td>Set of assets owned solely by the seller and used to create an uncustomized product</td>
</tr>
<tr>
<td>$c(e_0; B)$</td>
<td>Cost to the seller of the effort ($e_0$) of creating an uncustomized product given a set of assets $B$</td>
</tr>
<tr>
<td>$i$</td>
<td>Investment by the buyer/principal (“buyer”) – assumed to be the same for an uncustomized product or the customized product</td>
</tr>
<tr>
<td>$e_1$</td>
<td>Differential effort by the seller to create the customized product</td>
</tr>
<tr>
<td>$X(i, e_1)$</td>
<td>Value ($) of the customized product to the buyer</td>
</tr>
<tr>
<td>$s(X(i, e_1))$</td>
<td>Exchange price ($) of the customized product as a commission or percentage of the value of the product</td>
</tr>
<tr>
<td>$a_2$</td>
<td>Sellers share of ownership of the assets used in producing the customized product</td>
</tr>
<tr>
<td>$Y(i, e_1)$</td>
<td>Change in value ($) of the assets ($Y = A \cup B$) used in producing the customized product as a function of the effort of the seller and the investment by the buyer</td>
</tr>
<tr>
<td>$a_2Y(i, e_1)$</td>
<td>Seller’s share of the change in value ($) of the assets ($Y = A \cup B$) used in producing the customized product</td>
</tr>
<tr>
<td>$a_4Z(e_1)$</td>
<td>Private value ($) to the seller produced by seller effort</td>
</tr>
<tr>
<td>$c(e_1 - e_0)$</td>
<td>Differential cost to the seller of effort ($e_1$) to produce the customized product over the effort ($e_0$) to produce an uncustomized product</td>
</tr>
</tbody>
</table>

In short, equation 13 includes the effect of the agent’s effort to create a customized product, $e_1$, and the effect of the agent’s effort to create an uncustomized product, $e_0$. $e_1$ affects 1) the value of the final product, $X$, 2) the final value of the assets used in the transaction, $Y$, and 3) the value of private activities the agent undertakes during the transaction, $Z$. $e_0$ affects the cost to the agent of producing an uncustomized asset, $c$. Finally the marginal effort to produce the customized asset, $e_1 - e_0$, affects the cost of that marginal effort, $c$. This also follows intuition in that the payoff to the agent is the payoff of selling an uncustomized product.
\( p - c(e_0; B) \) plus a premium benefit representing the additional value of a customized product to the buyer, \( s(X(i, e_1)) + a_2 Y(i, e_1) + a_4 Z(e_1) - c(e_1 - e_0) \).

I am now in a position to determine the individually-optimal choice of \( i \) for the buyer and \( e \) for the seller. To accomplish this, I first differentiate the payoff functions (eq. 12 and 13) with respect to the decision variables (\( i \) and \( e \) respectively), resulting in eq. 15 and eq. 16. I set these derivatives equal to zero in eq. 15a and eq. 16a, generating the first-order conditions which are necessary conditions for optimality (Woods 1934). I eliminate terms which are always zero either because (a) they are determined before \( i \) and \( e \), (b) they do not vary with \( i \) or \( e \) respectively, or (c) they are multiplied by a zero term. Finally, I solve for the principal’s and agent’s cost terms. This treatment results in equations 15b and 16b:

\[
\frac{\partial \pi_1}{\partial i} = r'(i; A) - k'(i) + \left[X_1(i, e_1) - s'(X(i, e_1))X_1(i, e_1)\right] + (1 - a_2)Y_1(i, e_1) \quad (14)
\]

\[
0 = r'(i^*; A) - k'(i^*) + \left[X_1(i^*, e_1) - s'(X(i^*, e_1))X_1(i^*, e_1)\right] + (1 - a_2)Y_1(i^*, e_1) \quad (14a)
\]

\[
k'(i^*) = X_1(i^*, e_1) - s'(X(i^*, e_1))X_1(i^*, e_1) + r'(i^*; A) + (1 - a_2)Y_1(i^*, e_1) \quad (14b)
\]

Differentiation of eq. 12 with respect to \( i \) results in the elimination of one term to arrive at eq. 15: \( \bar{p} \), the market price of an uncustomized product, is a constant relative to \( i \), the level of investment by the principal, and is eliminated.

\[
\frac{\partial \pi_2}{\partial e_1} = s'(X(i, e_1))X_2(i, e_1) + a_2 Y_2(i, e_1) + a_4 Z'(e_1) - c'(e_1 - e_0) \quad (15)
\]

\[
0 = s'(X(i, e_1))X_2(i, e_1) + a_2 Y_2(i, e_1) + a_4 Z'(e_1) - c'(e_1 - e_0) \quad (15a)
\]

\[
c'(e_1^* - e_0) = s'(X(i, e_1^*))X_2(i, e_1^*) + a_2 Y_2(i, e_1^*) + a_4 Z'(e_1^*) \quad (15b)
\]
Differentiation of eq. 13 with respect to $e_1$ results in the elimination of two terms to arrive at eq. 15. $\bar{p}$, the market price of an uncustomized product, and $c(e_0; B)$, the seller’s cost of effort to produce an uncustomized product, are constants relative to $e_1$, the level of effort to produce a customized product.

Equations 14b and 15b represent the optimal choices for the principal’s investment, $i^*$, the agent’s effort to produce a customized asset, $e_1^*$, and the agent’s effort to produce an uncustomized asset $e_0^*$. This set of equations culminates the current integration of GHM and IST. I analyze this model in the following section.

**Analysis**

**Analysis of Buyer’s Payoff ($\pi_1$)**

Both the buyer’s choice of investment, $i$, and the seller’s choice of effort on the customized asset, $e_1$, influence the buyer’s payoff, $\pi_1$. In order to determine more precisely how these choices affect the buyer’s result, I separately differentiate equation 12 with respect to $i$ and $e_1$, resulting in equation 14 above (and repeated below) and equation 16, below. As expected, this eliminates terms that do not include $i$ and $e_1$, allowing focus on the terms that influence the buyer’s outcome.

How the buyer’s payoff ($\pi_1$) changes as a function of the buyer’s investment ($i$) tells us the level to which the buyer will be willing to invest in order both to directly gain value and to influence the distribution of value from the seller’s activity:

$$\frac{\partial \pi_1}{\partial i} = r'(i; A) - k'(i) + \left[ X_1(i, e_1) - s'(X(i, e_1))X_1(i, e_1) \right] + (1 - a_2)Y_1(i, e_1)$$  \hspace{1cm} (14)
How the buyer’s payoff ($\pi_1$) changes as a function of the seller’s effort ($e_1$) shows the magnitude of the positive externality that the seller’s effort exerts on the buyer. Although the seller does not take this benefit to the buyer into account when choosing her effort, additional levels of effort nonetheless benefit the buyer indirectly and, in anticipation of these levels of effort, can influence her willingness to invest.

$$\frac{\partial \pi_1}{\partial e_1} = [X_2(i, e_1) - s'(X(i, e_1))X_2(i, e_1)] + (1 - a_2)Y_2(i, e_1) + p_3W'(e_1)$$

Equation 16 is the result of differentiating the principal’s payoff, eq. 12, with respect to the agent’s effort, $e_1$. This shows which of the principal’s value channels are affected by the agent’s level of effort. The differentiation results in the elimination of two components: $r(i; A) - \bar{p}$, the principal’s payoff from a transaction to acquire an uncustomized asset, and $k(i)$, the cost of the principal’s effort in the transaction to acquire the customized asset, are constants relative to $e_1$, the agent’s level of effort to produce a customized product.

This analysis of the buyer’s profit functions produces some interesting implications:

- The buyer’s payoff relative to investment (eq. 14) is not affected by the price of an uncustomized asset, $\bar{p}$, but it is affected by the profit that would have been received from investment in an uncustomized asset (e.g. $r'(i; A) - k'(i)$). This supports the notion in the Value Capture Model (Ryall, 2004) that the next-best transaction influences which transactions firms will enter; if this next-best transaction becomes relatively better, the buyer’s gain from collaboration with the seller in question decreases. This implies that the buyer’s investment will be lower with a relatively better alternative transaction.

- From a motivational and goal-alignment perspective (aligning $e_1$ and $i$ to maximize $\pi_1$), the buyer’s investment and the seller’s effort overlap in the commission or exchange price and in the (potential via $a_2$) maintenance of the asset(s). Anything the buyer can do to induce higher effort from the seller will benefit the buyer through these two value channels.
• On the other hand, the seller’s effort \((e_1)\) unilaterally contributes to the buyer’s payoff \((\pi_1)\) via private benefits to the buyer \((p_3W'(e_1))\). As shown in eq. 16, these benefits cannot be captured by the seller and are thus not a motivator for the seller to increase \(e_1\). Such motivation will need to be provided indirectly (Makadok & Coff 2009) or else this potential gain will not be realized by the buyer.

• The buyer’s investment \((i)\) unilaterally contributes to the buyer’s payoff \((\pi_1)\) via the value of an uncustomized product \((r'(i; A))\), as shown in eq. 14. As the value of an uncustomized product increases relative to the value of a customized product, the benefit from collaboration with the seller in question decreases.

**Analysis of Seller’s Payoff \((\pi_2)\)**

Both the buyer’s choice of investment, \(i\), and the seller’s choice of effort on the customized asset, \(e_1\), influence the seller’s payoff, \(\pi_2\). In order to determine more precisely how these choices affect the seller’s result, I separately differentiate equation 13 with respect to \(i\) and \(e_1\), resulting in equation 15 above (and repeated below) and equation 17, below. As expected, this eliminates terms that do not include \(i\) and \(e_1\), allowing focus on the terms that influence the seller’s outcome.

Equation 15 (repeated below) shows how the seller’s payoff \((\pi_2)\) changes as a function of the seller’s effort \((e_1)\) and tells us the level to which the seller will be willing to provide effort in order both to directly gain value (payment from the buyer) and to influence the distribution of value from the buyers’ activity:

\[
\frac{\partial \pi_2}{\partial e_1} = s'(X(i, e_1))X_2(i, e_1) + a_2Y_2(i, e_1) + a_4Z'(e_1) - c'(e_1 - e_0)
\]

(15)

Equation 17 shows how the seller’s payoff \((\pi_2)\) changes as a function of the buyer’s investment \((i)\) and shows the magnitude of the positive externality that the buyer’s investment
exerts on the seller. Although the buyer does not take this benefit to the seller into account when choosing her investment level, additional levels of investment nonetheless (a) benefit the seller indirectly and (b) motivate the seller to increase her effort level – addressing the problem of the liverless task.

\[
\frac{\partial \pi_2}{\partial i} = s'(X(i, e_1))X_1(i, e_1) + a_2Y_1(i, e_1)
\]

(17)

Equation 17 is the result of differentiating the agent’s payoff, eq. 13, with respect to the principal’s investment. This shows which of the agent’s value channels are affected by the principal’s investment choice. The differentiation results in the elimination of three components: \( \bar{p} - c(e_0; B) \), the agent’s payoff from selling an uncustomized asset, \( Z \), the value to the agent of the agent’s personal tasks, and \( c(e_1 - e_0) \), the cost of the agent’s differential effort to produce the customized asset, are constants relative to \( i \), the principal’s level of investment.

This analysis of the seller’s profit functions produces some interesting implications:

- The value that the seller would have received in an alternative transaction, \( \bar{p} - c(e_0; B) \), influences the seller’s payoff, but does not appear in the maximization equation (eq. 15). Therefore, the alternative transaction does not influence the amount of effort on a customized product. However, recalling the analysis of the buyer’s investment above, the buyer’s investment is influenced by the alternative transaction. This unilateral influence is not intuitive and conflicts with other research (Gans et al. 2009).
- From a motivational and goal-alignment perspective (aligning \( e_1 \) and \( i \) to maximize \( \pi_2 \)), the buyer’s investment \( (i) \) and the seller’s effort \( (e_1) \) overlap in the commission or exchange price and in the (potential via \( a_2 \)) maintenance of the asset(s). If the seller can induce higher levels of buyer investment, she can benefit indirectly from this investment.
- On the other hand, the seller’s effort \( (e_1) \) unilaterally both contributes to private benefits to the seller \( (a_4Z'(e_1)) \) and increases the cost of providing a
customized product $c'(e_1 - e_0)$. This increase in cost may be offset by an increase in direct payment, commission, or both.

- The buyer’s investment does not influence any part of the seller’s profitability unilaterally (i.e. that is not also influenced by the seller’s effort). If the seller chooses zero effort, she cannot benefit solely from buyer investment, but must contribute to capture some of the complementarity.

**Analysis of First-Order Conditions on Buyer Investment ($i$)**

I now analyze the effects of buyer investment ($i$) on buyer’s ($\pi_1$) and seller’s ($\pi_2$) payoffs. Equation 14 (repeated below) shows how the buyer’s payoff ($\pi_1$) changes as a function of the buyer’s investment ($i$). Equation 17 (repeated below) shows how the seller’s payoff ($\pi_2$) changes as a function of the buyer’s investment ($i$).

\[
\frac{\partial \pi_1}{\partial i} = r'(i; A) - k'(i) + X_1(i, e_1) - s'(X(i, e_1))X_1(i, e_1) + (1 - a_2)Y_1(i, e_1) \quad (14)
\]

\[
\frac{\partial \pi_2}{\partial i} = s'(X(i, e_1))X_1(i, e_1) + a_2Y_1(i, e_1)
\]

(17)

If $i^*$ were determined in perfect coordination between buyer and seller, both eq. 14 and eq. 17 would be necessary first-order conditions for optimality. An integrated hierarchical transaction, as in GHM, approximates this coordination. Setting eq. 14 and eq. 17 equal to zero and reducing yields a simple condition for the optimal investment by an integrated buyer:

\[
k'(i^*_{int}) = r'(i^*; A) + X_1(i^*, e_1) + Y_1(i^*, e_1) \quad (18)
\]

Comparing this to eq. 14b, the condition for optimal investment for a non-integrated buyer:

\[
k'(i^*_{non}) = X_1(i^*, e_1) - s'(X(i^*, e_1))X_1(i^*, e_1) + r'(i^*; A) + (1 - a_2)Y_1(i^*, e_1) \quad (14b)
\]
shows that, evaluated at the optimal level $i^*$, the marginal value of additional investment for a non-integrated buyer is strictly higher than for an integrated buyer: The $r'$ terms in both equations are the same. The $Y_1$ term in eq. 14b is less than the $Y_1$ term in eq. 18 because $0 < a_2 < 1$, therefore, $0 < (1 - a_2) < 1$. The $X_1$ term in eq. 14b is less than the $X_1$ term in eq. 18 because $0 < s'(X(i^*,e_1)) < 1$. This implies that the level of investment by the non-integrated buyer, $i_{non}^*$, is strictly less (following the conclusions of GHM) than the level of investment by the integrated buyer, $i_{int}^*$, indicating that full integration would encourage further buyer investment. While the non-integrated buyer has an equal opportunity to make additional investments, she does not have an equal incentive to do so.

This analysis of the buyer’s optimal level of investment produces some interesting implications:

- The buyer’s investment $(i^*)$ changes the value of the product, $X_1$, (and therefore the commission or exchange price, $s'$), along with the value of the assets used, $Y_1$. Both quantities are shared with the seller through the governance mechanisms of exchange price and shared asset ownership. This clearly shows two channels through which the seller can capture a share of the value created by the buyer’s investment, and thus a benefit to the seller of cooperating in a governance agreement that encourages investment by the buyer.

- This analysis highlights the effect of a transaction that uses an uncustomized product on the incentives of both parties. As in Ryall (2004), the buyer has an alternative transaction which acts as a reservation price and captures that value fully, along with the direct change in that value due to the buyer’s investment, that does not require any action by the seller. There is no mechanism for the seller to capture part of this value channel; it accrues purely to the buyer and thus forms the buyer’s minimum acceptable level of profitability in any partnership.

- In this model, the exchange price is a function of the final value of the product of the transaction to the buyer. Intuitively, the buyer includes the customized component in a more complex product that the buyer then sells. The governance form awards a fraction of this value (sale price of the final product) to the seller. In a ‘pure’ employment relationship, the employee’s share of the value of the transaction does not
(typically) depend on the value of the product sold \(X\). In this sense, the term \(s(X'(i, e_1))\) becomes a constant in \(i\) and the payoff equations would change to:

\[
\frac{\partial \pi_1}{\partial i} = r'(i; A) + X'(i, e_1) + (1 - a_2)Y'(i, e_1) \tag{14c}
\]

\[
\frac{\partial \pi_2}{\partial i} = a_2 Y'(i, e_1) \tag{17a}
\]

Although this simplifies the analysis, it destroys part of the seller’s incentives to invest \(e\). Further, in a pure employment relationship, asset ownership is not shared with the seller, \(a_2 = 0\), further removing incentives for effort. Such a commission or ownership structure therefore increases the efficiency of the buyer-seller relationship and is thus indicated as a hybrid form of governance.

**Analysis of First-Order Conditions on Seller Effort \((e)\)**

I now analyze the effects of seller effort \((e)\) on buyer’s \((\pi_1)\) and seller’s \((\pi_2)\) payoffs.

Equation 16 (repeated below) shows how the buyer’s payoff \((\pi_1)\) changes as a function of the seller’s effort \((e)\). Equation 15 (repeated below) shows how the seller’s payoff \((\pi_2)\) changes as a function of the seller’s effort \((e)\).

\[
\frac{\partial \pi_1}{\partial e_1} = \left[X_2(i, e_1) - s'(X(i, e_1))X_2(i, e_1)\right] + (1 - a_2)Y_2(i, e_1) + p_3 W'(e_1) \tag{16}
\]

\[
\frac{\partial \pi_2}{\partial e_1} = s'(X(i, e_1))X_2(i, e_1) + a_2 Y_2(i, e_1) + a_4 Z'(e_1) - c'(e_1 - e_0) \tag{15}
\]

If \(e_1^*\) were determined in perfect coordination between buyer and seller, both eq. 15 and eq. 16 would be necessary first-order conditions for optimality. An integrated hierarchical transaction, as in GHM, approximates this coordination. Setting eq. 15 and eq. 16 equal to zero and reducing yields a simple condition for the optimal investment by an integrated buyer:

\[
c'(e_1^* - e_0)_{int} = X_2(i, e_1^*) + Y_2(i, e_1^*) + p_3 W'(e_1^*) + a_4 Z'(e_1^*) \tag{19}
\]
Comparing this to eq. 15b, the condition for optimal investment for a non-integrated buyer:

\[ c'(e_1^* - e_0)_{\text{non}} = s'(X(i, e_1^*))X_2(i, e_1^*) + a_2Y_2(i, e_1^*) + a_4Z'(e_1^*) \]  

(15b)

shows that, evaluated at the optimal level \( e_1^* \), the marginal value of additional effort for a non-integrated seller, \((e_1^* - e_0)_{\text{non}}\), is strictly higher than for an integrated seller, \((e_1^* - e_0)_{\text{int}}\): The \( Z' \) terms in both equations are the same. Since \( 0 < a_2 < 1 \), \( a_2Y_2 \) is less than \( Y_2 \). Similarly, since \( 0 < s'(X(i, e_1^*)) < 1 \), the \( X_2 \) term for the non-integrated seller is lower. Finally, the \( W' \) term for the integrated seller is nonnegative. This implies that the level of effort by the non-integrated seller is strictly less (following the conclusions of GHM), indicating that full integration would encourage further seller effort. While the non-integrated seller has an equal opportunity to provide additional effort, she does not have an equal incentive to do so.

Unique insights that arise through the seller’s optimization problem include:

- This analysis shows the effect of the different outcomes of seller effort in the private benefit of that effort to the buyer \( p_3W'(e_1) \) and the seller \( a_4Z'(e_1) \) but, against this benefit, the seller also must consider the cost of providing that effort \( c'(e_1 - e_0) \). Because she incurs the full cost but only a fraction (i.e. the commission) of the benefit, she is not incented to provide full effort.

- In an employment situation, I assume that \( s = a_2 = 0 \) (the seller is paid a wage that is not dependent on the output value and has no share of ownership of the assets) and the equation reduces to: \( \frac{\partial \pi_2}{\partial e_1} = a_4Z'(e_1) - c'(e_1 - e_0) \). In this sense, an employment situation balances the cost of additional effort against the purely private benefit to the seller at the cost of eliminating the seller’s ability to collect some of the indirect benefits that effort produces for the buyer. Since the only economic motivation for the seller to engage in additional effort is its direct private benefit, effort will be even further underprovided under the employment relationship, leading to reduced transactional efficiency.
Analysis of Externalities

Externalities are the result of one transaction partner’s decisions (investment or effort) on the other partner’s results, and thus on her incentives to invest or provide effort. Therefore, the following analysis shows the effect of the seller’s effort on the buyer’s payoff, followed by the effect of the buyer’s investment on the seller’s payoff.

Equation 16 (repeated here) shows the effect of the seller’s effort on the buyer’s payoff:

\[ \frac{\partial \pi_1}{\partial e_1} = \left[ X_2(i, e_1) - s_2(X(i, e_1))X_2(i, e_1) \right] + (1 - a_2)Y_2(i, e_1) + p_3 W'(e_1) \] (16)

\( X \) is the value of the customized product to the buyer, so \( X_2 \) is the change in the value of the customized product to the buyer relative to a change in the seller’s effort. As the seller increases effort, the value of the product to the seller increases, so \( X_2 \) is unambiguously positive.

\( s \) is the exchange price of the customized product as a percentage of the value (e.g. commission to the seller) of the product; \( 0 \leq s \leq 1 \). \( s_2 \) is the change in the payment to the seller as a function of the change in the seller’s effort. As above, \( X_2 \) is unambiguously positive.

Therefore, the second term within the brackets is always positive. It is also always less than the first term within brackets. Therefore, the term in brackets is always positive.

\( 1 - a_2 \) is the buyer’s share of the change in value of the combined set of assets \((A \cup B)\) used in producing the customized product. \( a_2 \) is the percentage share of ownership for the seller; \( 0 \leq a_2 \leq 1 \). \((1 - a_2)Y_2 \) is the change in the value to the buyer of the assets as a function of the change in the seller’s effort. Therefore, this term cannot be negative.

\( p_3 W \) is the private value to the buyer of seller effort on the leverless task. \( p_3 W' \) is the change in value relative to the seller’s effort and cannot be negative.
For these reasons, \( \frac{\partial \pi_1}{\partial e_1} \) is always positive and thus seller effort exerts a positive externality on the buyer. In this sense, the buyer gains benefit from seller effort – although the buyer cannot control it, she can induce it through the choice of governance form.

Equation 17 (repeated here) shows the effect of the buyer’s investment on the seller’s payoff.

\[
\frac{\partial \pi_2}{\partial i} = s_1(X(i, e_1))X_1(i, e_1) + a_2Y_1(i, e_1)
\]

(17)

\( s \) is the exchange price of the customized product as a percentage of the value (e.g. commission) of the product; \( 0 \leq s \leq 1 \). \( s_1 \) is the change in the payment to the seller as a function of the change in the seller’s effort. Therefore, the first term is unambiguously positive.

\( a_2Y \) is the seller’s share of the change in value of the assets \( (Y = A \cup B) \) used in producing the customized product. As above, \( 0 \leq a_2 \leq 1 \). \( a_2Y_1 \) is the change in value to the seller of the assets as a function of change in the buyer’s investment. It cannot be negative.

For these reasons, \( \frac{\partial \pi_2}{\partial i} \) is always positive and thus buyer investment exerts a positive externality on the seller – although the seller cannot control it, she can induce it through the choice of governance form.

Note that both buyer and seller have an incentive to choose a governance form that induces the other’s increased investment. Since the seller’s effort always produces some value for the buyer and the buyer’s investment always produces some value for the seller, these results replicate the findings in Hart (1995). Some of the result of effort and investment go to the other
transaction partner (each partner has positive externalities) and therefore, motivation for the buyer to invest and the seller to give effort are always suboptimal.

**Conclusion**

Throughout this analysis, I have derived implications from the model that are empirically testable. I list brief versions of each in Table 5, along with the analysis section in which they were derived.

**Table 5: Propositions**

<table>
<thead>
<tr>
<th>Analysis section</th>
<th>Proposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Buyer’s Payoff</td>
<td>The buyer’s investment will be relatively lower with a decrease in the difference in profits between the current transaction and the next best alternative.</td>
</tr>
<tr>
<td>2 Buyer’s Payoff</td>
<td>If the buyer can incent relatively higher effort from the seller, the buyer will collect greater value through exchange price and maintenance of the assets used in the transaction.</td>
</tr>
<tr>
<td>3 Buyer’s Payoff</td>
<td>Private benefits to the buyer are solely a function of the seller’s effort. The buyer will have to utilize indirect or synergistic (Makadok &amp; Coff 2009) incentives in order to acquire value from this channel.</td>
</tr>
<tr>
<td>4 Buyer’s Payoff</td>
<td>The buyer’s investment will be relatively lower with a decrease in the value of a customized asset relative to the value of an uncustomized asset.</td>
</tr>
<tr>
<td>5 Seller’s Payoff</td>
<td>Unlike the buyer, the seller’s effort will be unaffected by the relative profitability of an alternative transaction.</td>
</tr>
<tr>
<td>6 Seller’s Payoff</td>
<td>Like the buyer, if the seller can incent relatively higher investment from the buyer, the seller will collect greater value through exchange price and maintenance of the assets used in the transaction.</td>
</tr>
<tr>
<td>7 Seller’s Payoff</td>
<td>Increasing effort by the seller unilaterally affects private benefits to the buyer at a cost to the seller. The buyer may attempt to incent this effort through indirect or synergistic (Makadok &amp; Coff 2009) incentives.</td>
</tr>
<tr>
<td>8 Seller’s Payoff</td>
<td>In contrast to the buyer, who may receive value from the transaction with no investment, the seller must contribute effort in order to receive value from the transaction.</td>
</tr>
<tr>
<td>9 Buyer’s Investment Optimization</td>
<td>The seller captures the value of the buyer’s investment through the exchange price and asset ownership value channels. The seller will capture relatively more value with a share of ownership of the assets and/or a relatively higher commission share.</td>
</tr>
<tr>
<td>10 Buyer’s Investment Optimization</td>
<td>The influence of an alternative transaction on the buyer’s investment is relatively higher than its influence on the seller’s effort.</td>
</tr>
<tr>
<td>11 Buyer’s Investment Optimization</td>
<td>All else equal, a pure hierarchical transaction gives no incentives to the seller to provide effort.</td>
</tr>
<tr>
<td>12 Seller’s Investment Optimization</td>
<td>The seller’s cost of effort is balanced against the commission, asset ownership, and private value channels.</td>
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<td>Page</td>
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<tr>
<td>13</td>
<td>Seller’s Investment</td>
</tr>
<tr>
<td>14</td>
<td>Externalities</td>
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</tbody>
</table>

I will highlight one of the more interesting propositions derived from the analysis: the buyer and seller respond differently to the next best transaction. Intuitively, the buyer and seller are both economic actors and should respond similarly to the environment. However, this research indicates that the buyer’s investment is more highly influenced by the profitability of the next best transaction than is the seller’s effort. If this is confirmed empirically, it would mean that, when engaging in transaction A while not engaging in next best alternative transaction B, the buyer and seller behave differently. The relative profit amount between transaction A and transaction B will influence the level of investment by the buyer, decreasing investment as the profit difference decreases. However, according to my analysis, this will not influence the level of the seller’s effort. Empirical research in this area to demonstrate this effect would be useful.

**Future Research**

As a future research extension, it is possible to go inside the firm. Employee motivation in GHM was initially viewed as being tied to asset ownership and more recently as a result of “reference points” derived from the contract (Hart & Moore 2008). Incorporating the IST model of incentives (Makadok & Coff 2009) extends the idea of employee motivation and employer authority as a candidate explanation for employee motivation and other incentives in the GHM model. An incentive model of ES, and therefore of complex transactions generally, would provide a theoretical infrastructure to support research on practical means to align agent incentives within the organization to critical actions to be undertaken before, during, and after
the complex transaction, an aid to reducing both the probability and severity of failure in these complex and costly transactions.

A more precise understanding of the principal’s motivations and tasks represents an additional opportunity for future research. Viewing the principal as one who does not do work in the transaction, then this representation of an ‘investment’ by the principal is sufficient, but the nature of transactions, particularly ES transactions, indicates that the principal is actually a partner in the transaction effort. In this sense, the principal provides not a generic ‘investment’, but reserves specific tasks in the transaction to work on. If so, the principal/partner likely responds to similar motivations as the agent. It would be naïve to assume that the principal does not need motivation.

**Discussion and Contributions**

The primary intended contribution of the combined model is to formally strengthen the concept of value channels as identified in Chapter 2. The model shows that transaction partners bring value channels, such as assets used in the transaction, investment, and effort, to the transaction ex ante. The model also shows that partners take value channels, such as assets used in the transaction, the value of personal tasks, and exchange price, away from the transaction ex post. In this way, the formal model indicates that a transaction consists of the exchange, creation, and consumption of value channels. This represents a new definition of exchange transactions. Such a definition is a contribution to the strategic management theories of value creation and capture through transactions.
TCE/IST Literature

The combined model shows how the interaction of the motivations of an individual agent, investment by the principal, and the selection of a transaction governance form relate to variations in exchange price, final sale price of the principal’s product, cost to the agent, and value sharing between the transaction partners. This extends IST (and possibly TCE) into a theory of exchange between firms and individuals that considers both market forces and individual preferences. Such an extension makes significant contribution to several streams of research, which I will highlight in this section.

Organizational economists are currently engaged in understanding how the major theoretical bases of strategy can be “intertwined” (Mahoney 2005, p.219) to produce greater insights into the relationships between firms. The combined model demonstrates the value of including IST into the organizational economics toolkit.

Further, this research answers a call to extend IST to incorporate property rights as a causal mechanism for hybrid forms (Makadok & Coff 2009, p.313).

Property Rights Literature

This research contributes to both the GHM property-rights stream and the TCE hybrid-governance stream by modeling governance forms (from TCE) in GHM that may be more efficient than non-integration while not requiring the relatively drastic step of transaction partner integration. This link shows commonality between two prominent transaction-governance theories and forms a first step in their unification, which would be a major contribution to strategic management (Kim & Mahoney 2006).
I formally establish three corresponding states between the IST and GHM: 1) The *hierarchy* in TCE will correspond to the *integration* case from GHM; 2) The *market* in TCE will correspond to the *non-integration* case from GHM; and 3) The *pure hybrids* in TCE will be explainable from the GHM formulation, due to the IST definition of such forms as being solely owned by one of the transaction partners. I further expect the synthesis to result in a GHM-compatible definition of the third state of correspondence - the “quasi-integration” state that lies between integration and non-integration presently absent from the GHM formulation, which subjects it to critique (Noorderhaven 1994) and constrains its empirical application.

**IS Literature**

This research also contributes to the IS literature, providing a theoretical understanding regarding the applicability of transaction governance theories to IS sourcing transactions (Alaghehband et al. 2011; Lacity et al. 2011) by demonstrating which TCE-based hybrid governance forms are efficient in specific types of ES transactions. Results from this research will also likely be applicable to non-IS transactions that demonstrate similar complexity, with M&A activity, R&D transactions, and joint product-development ventures as obvious candidates.

Identification of applicable hybrid governance forms based on incentive mechanisms may provide a much-needed theoretical basis for the selection of effective governance forms and help to address high failure rates in high-stakes complex-asset acquisition transactions. An additional result is guidance for practitioners in selecting the proper governance form for complex-asset transactions based on the intra- and interfirm motivational forces available to help ensure satisfactory transaction completion.
A validated predictive model of how sole-owner hybrid forms operate within the integrated GHM/IST theory should allow for both more robust quantitative analysis of empirical complex-asset acquisitions (such as ES) and further extension of both models. Further, empirical support of the relationship between ES and organization-level strategy via the make-vs.-buy decision would solidify a difficult-to-demonstrate function of IT in its significant and continuing role in organizational strategy (Drnevich & Croson 2013).

**Organizational Economics Literature**

**Describing how firms interact as transaction partners**

My finding that the IST model supports both TCE logic and GHM logic builds a bridge between these two prominent theories of the firm. The initial results of this research stream, which goes inside the transaction but stays outside the firm, strengthens a mezzanine-level theory of industrial organization that describes how organizations actually interact with each other as transaction partners. This is a distinct theoretical domain, contrasted with macro-level theories of how firms interact with the overall environment and micro-level theories of how firms behave as collections of individuals. Furthermore, a predictive theory of transaction governance would begin to explain the relationship between how a firm intends to use the prospective transaction to compete (strategy) and the practical retrospective results of that intent (operations).

**Highlighting the risks and costs of acquisition transactions**

Absent a prescriptive theory of governance form selection, firms must resort to developing transaction governance schemes based on experience, in the best case, or trial-and-error. TCE and GHM are both based on the notion that firm managers understand the risk of mismatched governance forms which expose them to opportunism. In this sense firms may be
forgoing valuable transactions due to this risk (Kim & Mahoney 2006), which is not modeled and therefore cannot be measured. The combined model, by relating the use of different governance forms through agent motivations to variation in exchange price, final sale price of the principal’s product, and value sharing between the transaction partners, represents a first step in modeling the cost, and therefore the risk, of mismatches in governance.

Bridge between the macro-level property rights theory and micro-level understanding of heterogeneous human capital in the existence of heterogeneous synergies between tasks

The combined model develops the notion that the idiosyncratic preferences of the agent interact with the tasks in the transaction to increase or decrease efficient creation of value within the transaction. One agent (firm or individual, Makadok & Coff 2009) may have a particular synergy pattern with a given set of tasks while another agent may have a different synergy pattern. This difference may be due to idiosyncratic work processes, slightly different skill sets, or simple individual preference. The combined model would predict different efficient governance forms to motivate the different agents. In this way, the combined model takes a first step in relating idiosyncratic agents to variation in exchange price, final sale price of the principal’s product, and value sharing between the transaction partners. Such a relationship may help to explain the multilevel challenges in strategic human resource research (Coff & Kryscynski 2011).
Chapter 3 References


Chapter 4. Towards an Endogenous IT Outsourcing Theory: Validating the Value Component of ITO Transactions

Introduction

A debate is ongoing over the theoretical foundations of the make or buy decision in the IT outsourcing (ITO) literature. This debate centers on the use of TCE as a theoretical base, with research reaching different conclusions. Some (Lacity, Willcocks, and Khan, 2011) argued that research should develop a new endogenous theory of ITO. Others (Alaghehband et al., 2011) argued that TCE should be applied more faithfully. More recently, this line of debate continues in the current literature (Aubert and Rivard, 2016; Lacity and Khan, 2016; Schermann et al., 2016a; Schermann, Yetton, and Krcmar, 2016b), but beyond producing a structure for the core concepts a new theory should consider (Lacity et al., 2011), no new candidate theory has emerged. In this chapter, I argue that my formal model of hybrid transaction governance, as developed in Chapter 3, may help form a foundation for such a new endogenous theory of ITO. Therefore, in this chapter, I begin the process of applying my model to the ITO context and then empirically validating that model in the ITO domain.

A primary purpose of transaction governance forms is to guard against opportunism by either party (Williamson, 1979, 1988, 1996). Less obvious is what, exactly, needs to be guarded. Since opportunism is “a deep condition of self-interest seeking that contemplates guile” (Williamson, 1988, p. 68), and the purpose of engaging in transactions is to exchange value

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5 Interestingly, this research does not specifically include value delivered to the transaction partners, I would argue for its inclusion as a critical outcome of ITO transactions.
(Besanko, Dranove, and Shanley, 1999; Peteraf and Barney, 2003), I submit that the purpose of governance is to guard, specifically, value. Further, as I show in previous chapters, value is not a one-sided phenomenon; both partners expect to acquire value from the transaction. In this sense, a new theory of ITO should consider the choice of governance form for the ITO transaction and an assessment of how well that chosen governance form delivers expected value for both transaction partners.

Makadok and Coff, (2009) predict that at least some of the value produced by the transaction to both the buyer and the seller is not captured in price, although some non-price value may influence price, as in the case of selling for a lower price in order to get a project that provides non-price value through (for example) learning (Mayer and Argyres, 2004) or experience in innovative technology (Adner and Kapoor, 2010; Priem, Li, and Carr, 2012). Therefore, in order to measure the influence of governance form on value shares, particularly in hybrid transactions, research should include instruments that take a broad view of these kinds of value.

A review of the value literature provides some rich theoretical discussion of non-price value channels such as relational contracting (Argyres and Mayer, 2007; Mayer and Argyres, 2004) and reputation (Hennart, 1993; Mahoney and Qian, 2013), but little discussion on actually measuring the value captured in those non-price channels. One notable exception (Patterson and Spreng, 1997) provides a validated instrument that measures non-price antecedents of value in transactions, such as implementable and effective results, and innovation and creativity in problem solving. However, this instrument was validated only for buyers in transactions, not sellers, and there appears to be no parallel instrument to measure non-price value to the seller.
This situation inhibits the ability to determine whether, and in what ways, governance form influences how value is shared between the buyer and seller in hybrid transactions. In order to proceed towards a resolution of the larger ITO theory debate, then, I would need to develop and validate an instrument to measure seller value. Therefore, in this research, as a first step, I leverage and extend the Patterson and Spreng, (1997) buyer’s model to the sellers in transactions to assess the antecedents of buyer value as antecedents of seller value in transactions. I then attempt to validate this extension on a sample of transactions in the ITO context. Therefore, my central research question in this chapter is: does the seller in a transaction perceive drivers of non-price value in ways similar to the buyer? In order to answer this question, I surveyed a small consulting firm using an adaptation of the Patterson and Spreng, (1997) instrument to test the buyer's value model in the seller’s context.

This research contributes to understanding how seller value can be measured in ITO transactions. If value produced by the transaction for both the buyer and seller can be measured effectively, research can proceed to determine how transaction attributes and governance form combine to produce and guard value for the transaction partners. This measurement instrument and the related subsequent research it can facilitate will constitute a major contribution towards resolving the debate on a new endogenous theory of ITO (Lacity et al., 2011). Further, a detailed view of seller value will broaden the usual view of sellers (and agents) as mere price-driven, profit maximizing, drones (Gibbons, 2005). Finally, the ability to measure seller value, along with buyer value, is critical in validating the formal model developed in Chapter 3, and thus the value channel concept generally.
**Theory Background**

Basic economics tells us that a seller in a market is generally a pure profit maximizer. All else being equal, if the seller can make any additional profit by changing transactions or transaction partners, the seller will most likely do so (Gans, MacDonald, and Ryall, 2009). However, Makadok and Coff, (2009) explain that some incentives within a hybrid transaction are driven by non-price properties of the exchange, such as the value of an asset after the transaction completes. Such non-price value channels still provide value and are a key component of value sharing in hybrid transactions.

As I mentioned earlier, empirical validation of formal theory for value creation and capture in IT asset acquisition transactions requires measurement of value captured by each party in a transaction. Buyer value has at least one validated measure (Patterson and Spreng, 1997). However, I have found no parallel measure of seller value. In this sense, a measure of seller value is necessary to validate the formal model. Therefore, in order to prepare the way to validate the formal model, in this research I attempt to validate the Patterson and Spreng, (1997) model of buyer value in the context of the seller’s value captured from a transaction.

The Patterson and Spreng model shows that transaction outcomes, production methodology, service levels, relationship quality, international considerations, and problem identification drive both perceived satisfaction with the transaction and perceived value from the perspective of the buyer. In addition, perceived value is an important component of perceived satisfaction, but perceived satisfaction fully mediates any direct relationship between perceived value and repurchase intention. I depict this model in Figure 1.
Hypothesis Development

The Patterson and Spreng, (1997) study proposed fourteen hypotheses regarding the relationships between drivers of value, perceived value, satisfaction, and repurchase intent (Patterson and Spreng, 1997). While my study replicates those hypotheses, my primary interest is in the relationship between the antecedents of value and perceived value from the seller’s perspective. However, I will also hypothesize the relationships related to perceived satisfaction and repurchase intention for completeness.

Hybrid transactions defy the “arm’s-length” nature of market transactions, bringing the transaction partners into different incentive patterns (Makadok and Coff, 2009), mutual adjustments (Ménard, 2004), greater interdependency via the bilateral monopoly (Williamson, 1979), and a closer “embeddedness” and relationship (Ebers and Oerlemans, 2013). Along with these forces, the transaction partners need to share information, cooperate to govern the
transaction, and share resources that are committed to completing the transaction. At the same time, the partners are viewed as competing for shares of the value created within the transaction (Lepak, Smith, and Taylor, 2007; MacDonald and Ryall, 2004). Nevertheless, the partners must cooperate in order for the transaction to produce value that can be captured or shared. Based on this need for cooperation, I expect transaction partners in hybrid transactions will have many similar goals while the transaction is underway. As an example, both transaction partners should generally find that responsiveness by the other partner would tend to support value for both partners. Therefore, I expect that many of the value drivers that apply to the buyer will also apply to the seller. I will make additional arguments in support of each hypothesis below.

Patterson and Spreng demonstrated a “global competence” dimension to buyer value which was intended to capture the value to the buyer of a seller’s broad set of contacts and information sources (Patterson and Spreng, 1997). In the study, they operationalized this dimension as “Made good use of their international contacts to come up with solutions.” The consulting firm that produced my data did not engage in international projects and had particularly limited international contacts. Thus, I eliminated this dimension from my analysis and this study has no matching hypothesis on the global dimension of value. This is not to say that global reach is unimportant, but that the sample under study would not be useful in assessing its importance to the seller.

The primary purpose of many of the transactions in my sample is to deliver a completed product to the buyer. In the IT consulting context, the product may be a software system, a research report on a technology, or a proof-of-concept product to explore the feasibility of future investment by the buyer. A large body of research on IT project failure reports significant indications of dissatisfaction among buyers who did not receive a “working” product at the end
of the transaction (Conboy, 2010; Kappelman, McKeeman, and Zhang, 2006). In addition, the value of the transaction to the seller will be improved when there is no post-hoc wrangling between the seller and the buyer over whether the contracted functionality is present in the product. Therefore, I expect that successful transaction outcomes in the form of a useable product will be positively associated with both perceived value and satisfaction on the part of the seller. Stated formally:

_H1a: The degree to which the seller believes the outcome of the transaction is useful will be positively associated with the seller’s perceived value._

_H1b: The degree to which the seller believes the outcome of the transaction is useful will be positively associated with seller’s satisfaction._

In an IT consulting setting, sellers may have a delivery methodology that has been validated through many projects. Examples of such methodologies are project management and its “agile” offshoots. Lack of attention to following a prescribed methodology has been implicated in IT project failure research (Keil et al., 2008). Failed projects are often abandoned (Boehm, 2000) and, thus, cannot deliver value for either the buyer or the seller. For these reasons, I expect that the seller’s ability to use a preferred methodology will be positively associated with both perceived value and satisfaction on the part of the seller. Stated formally:
**H2a:** The degree to which the seller believes the transaction partner supported the chosen methodology for the transaction will be positively associated with the seller’s perceived value.

**H2b:** The degree to which the seller believes the transaction partner supported the chosen methodology for the transaction will be positively associated with seller’s satisfaction.

The Patterson and Spreng research was conducted in the management consulting services industry (Patterson and Spreng, 1997). As such, they identified a strong service component that consisted of availability, reliability, dependability, and professionalism among the seller’s staff. In a hybrid transaction, the buyer and seller are often locked in a “binary monopoly” in which it is expensive for either partner to exit the transaction prematurely (Williamson, 1988). In addition, like many consulting contexts, the IT consulting industry usually expects that the buyer’s needs will be expressed explicitly (Verner and Evanco, 2005; Xu and Brinkkemper, 2007). Therefore, unlike a market transaction, the seller needs for the buyer to perform well in support of the knowledge transfer required for the seller to learn the buyer’s business concerns. In this sense, the seller will value service components delivered by the buyer within the transaction. For these reasons, I expect that components of service rendered to the seller by the buyer will be positively associated with both perceived value and satisfaction on the part of the seller. Stated formally:
H3a: The degree to which the seller believes the transaction partner provided strong service within the transaction will be positively associated with the seller’s perceived value.

H3b: The degree to which the seller believes the transaction partner provided strong service within the transaction will be positively associated with the seller’s satisfaction.

The quality of the relationship between the buyer and the seller also figured heavily in the buyer’s perception of value and satisfaction in the Patterson and Spreng study. As I argued above, such a relationship should also be valuable to the seller. Therefore, I expect that the strength of the relationship between the buyer and seller will be positively associated with both perceived value and satisfaction on the part of the seller. Stated formally:

H4a: The degree to which the seller perceives a good relationship with the buyer within the transaction will be positively associated with the seller’s perceived value.

H4b: The degree to which the seller perceives a good relationship with the buyer within the transaction will be positively associated with the seller’s satisfaction.

Patterson and Spreng also found that a clear goal delivered through a discussion of the aims and goals of the partners drove perceived value and satisfaction. In the IT consulting field, requirements for the product of the transaction are considered essential and poor requirements are often cited as reasons for project failure and lack of value and satisfaction (Verner and Evanco, 2005; Xu and Brinkkemper, 2007). In this sense, I expect that a clear set of goals and problems will be positively associated with both perceived value and satisfaction on the part of the seller. Stated formally:
**H5a:** The degree to which the seller understands the problems and goals of the buyer within the transaction will be positively associated with the seller’s perceived value.

**H5b:** The degree to which the seller understands the problems and goals of the buyer within the transaction will be positively associated with the seller’s satisfaction.

While my research does not consider repurchase intention or satisfaction as such, I retain these quantities in the model in order to more closely follow the existing empirical model. In addition, an understanding of the seller’s intent to engage in another transaction with an existing transaction partner is an important indication of the overall value of the transaction to the seller (Gans et al., 2009).

Patterson and Spreng find that value, as a cost-benefit analysis, does not directly drive repurchase intent, but drives it indirectly through a positive relationship between value and satisfaction (Patterson and Spreng, 1997: 420). I expect that the relationship between value, satisfaction, and intent will hold for the seller. Specifically, I expect that value will be positively associated with satisfaction and that satisfaction will be positively associated with intent. Stated formally:

**H6a:** The degree to which the seller perceives value from the transaction will be positively associated with the degree to which the seller perceives satisfaction.

**H6b:** The degree to which the seller perceives satisfaction from the transaction will be positively associated with the degree to which the seller reports intent to engage in a similar project with the transaction partner.

I could find no evidence of control variables in the Patterson and Spreng, (1997) study. In this analysis, I included several. Actual financial value of the project may have an influence
on perceived value. Although profitability figures are not available to the project managers who responded in this sample, they were quite aware of the relative size of the contracts. Since the project managers rated more than one project in the sample, I included a dummy variable to control for bias on their part. Different firms may perform projects with varying levels of efficacy and, in several cases, the sample contains multiple projects with the same client firm. Therefore I included a dummy variable for each client firm. This also controls for common concerns like firm size.

**Method**

The Patterson and Spreng, (1997) study measured each construct with multiple Likert scale items, derived from interviews with experts. An example is the measurement of the Outcomes construct using the following two items: [The transaction] produced results which we are able to implement; [The transaction] produced results which will enable us to increase our organization’s effectiveness (Patterson and Spreng, 1997: 425).

In order to validate the Patterson and Spreng model, I made slight modifications to the items used so they would be applicable to the seller’s context. As an example, I rewrote the original Satisfaction item “I am very satisfied with our decision to commission this consultancy firm,” (Patterson and Spreng, 1997: 425) changing it to “I am very satisfied with our decision to partner with this firm on this project.” I made similar context-related changes to the remaining items. The complete set of revised items is in Table 6. I used this modified instrument to survey a small IT consulting organization regarding a sample of recent transactions with a number of different customers. I used PLS to analyze the data to determine whether the drivers of value found to be applicable to buyers are also important to sellers in determining the perceived value of transactions that they had completed.
Table 6: Items

<table>
<thead>
<tr>
<th>Outcomes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Outc1</td>
<td>We and/or the client were able to implement the results of this project</td>
</tr>
<tr>
<td>Outc2</td>
<td>The results of this project enabled us to increase our organization's effectiveness</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Method</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Meth1</td>
<td>The client supported the chosen methodology</td>
</tr>
<tr>
<td>Meth2</td>
<td>The client supported innovative ideas and solutions</td>
</tr>
<tr>
<td>Meth3*</td>
<td>The client supported creative solutions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Serv1</td>
<td>Client personnel were readily available for contact</td>
</tr>
<tr>
<td>Serv2*</td>
<td>Client personnel were reliable in meeting deadlines</td>
</tr>
<tr>
<td>Serv3*</td>
<td>Client personnel were dependable</td>
</tr>
<tr>
<td>Serv4</td>
<td>Client personnel were thoroughly professional in all they did</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Relationship</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rship1</td>
<td>The client supported a good rapport with relevant staff in our organization</td>
</tr>
<tr>
<td>Rship2</td>
<td>Client personnel developed a close working relationship with our staff</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem identification</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prob1</td>
<td>The client helped us clearly understand their aims and goals</td>
</tr>
<tr>
<td>Prob2</td>
<td>The client thoroughly expressed the problem before commencing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FSValue1</td>
<td>Considering the fee paid and our effort, overall I believe we received fair compensation for the effort</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Satisfaction</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FSSat1</td>
<td>I am very satisfied with our decision to partner with this firm on this project</td>
</tr>
<tr>
<td></td>
<td>Taking everything into consideration, how do you feel about the value of this project to the firm</td>
</tr>
<tr>
<td>FSSat2*</td>
<td>1=Very dissatisfied / 7=Very satisfied</td>
</tr>
<tr>
<td>FSSat3</td>
<td>1=Very pleased / 7=Very displeased</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intentions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FSIntentA</td>
<td>1=Very probably / 7=Not probable</td>
</tr>
<tr>
<td>FSIntentB</td>
<td>1=Impossible / 7=Very possible</td>
</tr>
<tr>
<td>FSIntentC</td>
<td>1=No chance / 7=Certain</td>
</tr>
</tbody>
</table>

(All items on a 7-point Likert scale, 1 = strongly disagree, 7 = strongly agree, unless otherwise noted; * indicates items that were removed based on results from the PLS analysis.)

I conducted pre-analysis and data validation with partial least-squares regression using SmartPLS version 3 (Ringle, Wende, and Becker, 2015). This pre-analysis allowed me to
establish the validity and reliability of the indicators (measures) through assessment of convergent and discriminant validity and to assess multicollinearity of factors.

In PLS-SEM analysis, constructs are modeled in two ways: reflective constructs are measured by a small subset of all possible indicators that may be effects or manifestations of the construct, while formative constructs are considered to be caused by or created from the combination of the indicators (Hair Jr et al., 2013). As noted previously, I use the model of buyer value, satisfaction, and repurchase intent from the Patterson and Spreng study (Patterson and Spreng, 1997). That study did not indicate whether the constructs were modeled as formative or reflective. Therefore, along with an experienced faculty researcher, I assessed the indicators to determine whether the constructs should be modeled as formative or reflective. I modeled problem, relationship, satisfaction, and intent as reflective constructs. I modeled outcome, service, and method as formative constructs. I will describe my reasoning for these choices.

I reviewed the items (see Table 6) adapted from the Patterson and Spreng model (Patterson and Spreng, 1997) to choose reflective or formative construct models. Generally, if the items related to a construct were synonymous, I used a reflective construct model, otherwise, if the items appeared to be covering a broad portion of a constructs domain, I used a formative construct model. As an example of a reflective construct, note the items that measure the Relationship construct, which concern 1) “a good rapport”, and 2) “a close working relationship” with the client. While not identical, these items are similar enough that I selected a reflective model for the construct. As an example of a formative construct, note the items that measure the Outcome construct, which concern 1) whether the result of the effort could be implemented, and 2) whether the result “enabled us to increase our organization’s effectiveness.” The wordings of
these items are significantly different, but both concern the value of the outcome(s) of the effort. Thus, I selected a formative model for the construct.

In general, convergent and divergent validity of indicators is supported by checking the cross loadings. An indicator should have a greater loading on its construct than on any other construct (Hair Jr et al., 2013). I report cross loadings of all (both formative and reflective) indicators in Table 7. No indicators were removed due to poor cross loadings.

<table>
<thead>
<tr>
<th></th>
<th>FSIntent</th>
<th>Satisfaction</th>
<th>Value</th>
<th>Method</th>
<th>Outcome</th>
<th>Problem</th>
<th>Relationship</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSIntentA</td>
<td>0.969</td>
<td>0.561</td>
<td>0.457</td>
<td>0.258</td>
<td>0.385</td>
<td>0.264</td>
<td>0.308</td>
<td>0.318</td>
</tr>
<tr>
<td>FSIntentB</td>
<td>-0.973</td>
<td>-0.523</td>
<td>-0.422</td>
<td>-0.245</td>
<td>-0.355</td>
<td>-0.248</td>
<td>-0.291</td>
<td>-0.299</td>
</tr>
<tr>
<td>FSIntentC</td>
<td>0.983</td>
<td>0.512</td>
<td>0.445</td>
<td>0.216</td>
<td>0.391</td>
<td>0.303</td>
<td>0.329</td>
<td>0.332</td>
</tr>
<tr>
<td>FSValue1</td>
<td>0.503</td>
<td>0.937</td>
<td>0.655</td>
<td>0.565</td>
<td>0.673</td>
<td>0.362</td>
<td>0.413</td>
<td>0.596</td>
</tr>
<tr>
<td>FSSat1</td>
<td>0.520</td>
<td>0.934</td>
<td>0.636</td>
<td>0.508</td>
<td>0.653</td>
<td>0.411</td>
<td>0.528</td>
<td>0.581</td>
</tr>
<tr>
<td>FSSat3</td>
<td>0.453</td>
<td>0.691</td>
<td>1.000</td>
<td>0.629</td>
<td>0.486</td>
<td>0.489</td>
<td>0.478</td>
<td>0.614</td>
</tr>
<tr>
<td>Meth1</td>
<td>0.188</td>
<td>0.288</td>
<td>0.328</td>
<td>0.512</td>
<td>0.323</td>
<td>0.193</td>
<td>0.457</td>
<td>0.398</td>
</tr>
<tr>
<td>Meth2</td>
<td>0.231</td>
<td>0.567</td>
<td>0.619</td>
<td>0.986</td>
<td>0.556</td>
<td>0.460</td>
<td>0.623</td>
<td>0.625</td>
</tr>
<tr>
<td>Outc1</td>
<td>0.268</td>
<td>0.626</td>
<td>0.403</td>
<td>0.409</td>
<td>0.866</td>
<td>0.322</td>
<td>0.573</td>
<td>0.641</td>
</tr>
<tr>
<td>Outc2</td>
<td>0.409</td>
<td>0.641</td>
<td>0.461</td>
<td>0.590</td>
<td>0.919</td>
<td>0.506</td>
<td>0.528</td>
<td>0.663</td>
</tr>
<tr>
<td>Prob1</td>
<td>0.368</td>
<td>0.478</td>
<td>0.507</td>
<td>0.480</td>
<td>0.558</td>
<td>0.957</td>
<td>0.504</td>
<td>0.637</td>
</tr>
<tr>
<td>Prob2</td>
<td>0.079</td>
<td>0.228</td>
<td>0.367</td>
<td>0.337</td>
<td>0.249</td>
<td>0.881</td>
<td>0.310</td>
<td>0.439</td>
</tr>
<tr>
<td>Rship1</td>
<td>0.293</td>
<td>0.487</td>
<td>0.450</td>
<td>0.633</td>
<td>0.571</td>
<td>0.420</td>
<td>0.975</td>
<td>0.738</td>
</tr>
<tr>
<td>Rship2</td>
<td>0.326</td>
<td>0.493</td>
<td>0.484</td>
<td>0.647</td>
<td>0.623</td>
<td>0.484</td>
<td>0.977</td>
<td>0.796</td>
</tr>
<tr>
<td>Serv1</td>
<td>0.315</td>
<td>0.578</td>
<td>0.569</td>
<td>0.517</td>
<td>0.646</td>
<td>0.569</td>
<td>0.720</td>
<td>0.923</td>
</tr>
<tr>
<td>Serv4</td>
<td>0.257</td>
<td>0.553</td>
<td>0.542</td>
<td>0.665</td>
<td>0.647</td>
<td>0.514</td>
<td>0.687</td>
<td>0.881</td>
</tr>
</tbody>
</table>

Beyond cross loadings, the validities of formative and reflective construct models are established through different means. In this section, I will describe those means and the results from my model. I follow the validity treatments from Hair Jr et al., (2013).
Reflective Constructs (Problem, Relationship, Satisfaction, and Intent)

The internal consistency of reflective construct models is established through a measure of composite reliability. Composite reliability varies from 0 to 1 with higher values indicating higher reliability. Similarly to Chronbach’s alpha, values of 0.6 to 0.7 or higher are acceptable in exploratory research (Hair Jr et al., 2013). The composite reliability measure for each construct is calculated by the SmartPLS software and is shown in Table 8.

Table 8: Composite reliability, AVE (in bold on the diagonal), and construct correlations

<table>
<thead>
<tr>
<th></th>
<th>Composite Reliability</th>
<th>Intent</th>
<th>Problem</th>
<th>Relationship</th>
<th>Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent</td>
<td>0.866</td>
<td>0.950</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem</td>
<td>0.917</td>
<td>0.278</td>
<td>0.846</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship</td>
<td>0.976</td>
<td>0.317</td>
<td>0.463</td>
<td>0.953</td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>0.933</td>
<td>0.547</td>
<td>0.413</td>
<td>0.502</td>
<td>0.875</td>
</tr>
</tbody>
</table>

The convergent validity of reflective construct models is established through assessing each indicator’s outer loading on its construct, along with an analysis of the average variance extracted (AVE) of the construct. AVE should be greater than 0.5. Outer loadings should be significant and should be higher than 0.7 (Hair Jr et al., 2013). AVE values for each reflective construct are shown in Table 8. One indicator for Satisfaction (Sat2) had an outer loading of 0.592 and was removed from the model. Outer loadings for each remaining indicator are shown in Table 9.
Table 9: Outer loadings

| Construct               | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (|O/STDEV|) | P Values |
|-------------------------|---------------------|-----------------|-----------------------------|-----------------|----------|
| FSIntentA <- Intent     | 0.969               | 0.969           | 0.019                       | 50.637          | 0.000    |
| FSIntentB <- Intent     | -0.973              | -0.973          | 0.013                       | 74.683          | 0.000    |
| FSIntentC <- Intent     | 0.983               | 0.983           | 0.008                       | 117.594         | 0.000    |
| FSSat1 <- Satisfaction  | 0.937               | 0.938           | 0.019                       | 48.428          | 0.000    |
| FSSat3 <- Satisfaction  | 0.934               | 0.931           | 0.025                       | 36.910          | 0.000    |
| Meth1 -> Method         | 0.512               | 0.503           | 0.125                       | 4.081           | 0.000    |
| Meth2 -> Method         | 0.986               | 0.979           | 0.026                       | 37.828          | 0.000    |
| Outc1 -> Outcome        | 0.866               | 0.853           | 0.098                       | 8.858           | 0.000    |
| Outc2 -> Outcome        | 0.919               | 0.900           | 0.073                       | 12.513          | 0.000    |
| Prob1 <- Problem        | 0.957               | 0.958           | 0.013                       | 73.590          | 0.000    |
| Prob2 <- Problem        | 0.881               | 0.876           | 0.045                       | 19.377          | 0.000    |
| Rship1 <- Relationship  | 0.975               | 0.975           | 0.011                       | 88.671          | 0.000    |
| Rship2 <- Relationship  | 0.977               | 0.977           | 0.009                       | 107.516         | 0.000    |
| Serv1 -> Service        | 0.925               | 0.919           | 0.052                       | 17.856          | 0.000    |
| Serv4 -> Service        | 0.883               | 0.874           | 0.062                       | 14.230          | 0.000    |

The discriminant validity of reflective construct models is established through the Fornell-Larcker criterion (Fornell and Larcker, 1981), which requires comparison of the square root of the AVE for each construct with the correlation between the construct and every other construct. If the square root of the AVE is higher than any correlation, discriminant validity is established (Hair Jr et al., 2013). Table 8 shows the correlations between the constructs, with the square root of the AVE on the diagonal. In all cases, the square root of the AVE values for the constructs are higher than any correlation with any other construct.

**Formative Constructs (Outcome, Service and Method)**

Constructs that are modeled reflectively demonstrate strong covariance between indicators, while formative models do not. The validity tests for reflective constructs rely heavily on this covariance (Hair Jr et al., 2013). Therefore, the validity of formative constructs has a more conceptual basis. Since the purpose of this study is to validate the Patterson and
Spreng, (1997) model, I had no choice of indicators and will rely on the validity of the model established in that study to demonstrate internal consistency and convergent validity for the indicators.

Correlations between indicators in formative construct models, multicollinearity, impact the estimation of weights and their statistical significance in PLS-SEM. The relative correlations between indicators are assessed through the variance inflation factor (VIF) of the construct. Constructs that have a VIF greater than 3.3 are considered problematic (Petter, Straub, and Rai, 2007). Two of the indicators for the Method construct (Meth2 and Meth3) had high VIFs (> 11.0) and high correlation between them (0.957). The two items were “Used innovative ideas and solutions” (Meth2) and “Used some creativity in solving our problems” (Meth3). As shown by the very high correlation (see Table 17), these two indicators appear to represent the same underlying notion. Therefore, I removed Meth3 from the model and ran the PLS algorithm again. The VIF of Meth2 fell to 1.150 after removing Meth3. The VIF of one of the indicators for the Service construct (Serv3) was greater than 3.3. I analyzed the correlations of the Service indicators. Serv3 (“Client personnel were dependable”) had a 0.780 correlation with Serv2 (“Client personnel were reliable in meeting deadlines”). As shown by the relatively high correlation (see Table 17) and the content of the indicators, these two indicators appear to represent the same underlying notion. Therefore, I removed Serv3 from the model. The final VIF values for indicators of the formative constructs are shown in Table 10.

<table>
<thead>
<tr>
<th></th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meth1</td>
<td>1.150</td>
</tr>
<tr>
<td>Meth2</td>
<td>1.150</td>
</tr>
<tr>
<td>Outc1</td>
<td>1.558</td>
</tr>
<tr>
<td>Outc2</td>
<td>1.558</td>
</tr>
</tbody>
</table>
Finally, I assess the outer weights and significance of each of the indicators through the bootstrapping procedure in SmartPLS. Each indicator that has a nonsignificant outer weight, an outer loading < 0.5, and is not theoretically necessary should be removed (Hair Jr et al., 2013). I analyzed the significance of the weights of the indicators in the model. The outer weights of all indicators except Meth1 (p=0.196) and Serv2 (0.634) are significant (p<0.05). I assessed the weights of these two indicators. The weight of Meth1 was 0.179, while the weight of Serv2 was 0.098. These results argue for removing both indicators from the model, but formative models require broad coverage of the domain represented by the construct (Hair Jr et al., 2013). Therefore, theoretical coverage of the domain is a critical factor in the decision to remove an indicator from a formative model. I analyzed the remaining indicators of the Method construct, Meth1 (“The client supported the chosen methodology”) and Meth2 (“The client supported innovative ideas and solutions”). Based on the different content of the indicators, and remaining as faithful as possible to the Patterson and Spreng, (1997) model, I retained both Meth1 and Meth2. I also analyzed the remaining indicators of the Service construct, Serv1 (“Client personnel were readily available for contact”), Serv2 (“Client personnel were reliable in meeting deadlines”), and Serv4 (“Client personnel were thoroughly professional in all they did”). In contrast to the Method indicators, I found that these indicators showed significant overlap and that the removal of one of these indicators would have a low effect on domain coverage. Therefore, I removed Serv2 from the model. I report the outer weights in Table 11.
Table 11: Outer weights for indicators of formative constructs

<table>
<thead>
<tr>
<th></th>
<th>Original Sample (O)</th>
<th>Sample Mean (M)</th>
<th>Standard Deviation (STDEV)</th>
<th>T Statistics (O/STDEV)</th>
<th>P Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meth1 -&gt; Method</td>
<td>0.179</td>
<td>0.174</td>
<td>0.128</td>
<td>1.400</td>
<td>0.162</td>
</tr>
<tr>
<td>Meth2 -&gt; Method</td>
<td>0.921</td>
<td>0.918</td>
<td>0.072</td>
<td>12.784</td>
<td>0.000</td>
</tr>
<tr>
<td>Outc1 -&gt; Outcome</td>
<td>0.493</td>
<td>0.507</td>
<td>0.196</td>
<td>2.520</td>
<td>0.012</td>
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<tr>
<td>Outc2 -&gt; Outcome</td>
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<td>0.598</td>
<td>0.201</td>
<td>3.109</td>
<td>0.002</td>
</tr>
<tr>
<td>Serv1 -&gt; Service</td>
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<td>0.617</td>
<td>0.141</td>
<td>4.326</td>
<td>0.000</td>
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<td>Serv4 -&gt; Service</td>
<td>0.494</td>
<td>0.479</td>
<td>0.157</td>
<td>3.149</td>
<td>0.002</td>
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</table>

Evaluation of the Structural Model

Having confirmed that the construct models are reliable and valid, I now turn to evaluation of the structural model for evidence to support the hypotheses. I will assess the structural model for collinearity issues, significance and relevance of the relationships, the level of $R^2$, and the effect sizes $f^2$ (Hair Jr et al., 2013).

Collinearity is assessed via the VIF of the constructs in relation to each other. If any VIF is greater than 5, the construct should be considered for elimination (Hair Jr et al., 2013). I assessed the inner VIF values from the PLS algorithm. As shown in Table 12, all inner VIF values are less than 5, indicating that collinearity is not a concern (Hair Jr et al., 2013).

Table 12: Construct VIF

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Satisfaction</th>
<th>Intent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method</td>
<td>1.993</td>
<td>2.349</td>
<td></td>
</tr>
<tr>
<td>Outcome</td>
<td>2.146</td>
<td>2.146</td>
<td></td>
</tr>
<tr>
<td>Problem</td>
<td>1.597</td>
<td>1.634</td>
<td></td>
</tr>
<tr>
<td>Relationship</td>
<td>2.848</td>
<td>2.903</td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td>3.818</td>
<td>4.108</td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td></td>
<td>1.976</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Significance and relevance of the relationships is assessed via path coefficients resulting from the bootstrapping algorithm. Of the twelve paths in the model, one (Service -> Value,
p=0.013) is significant at the P<0.05 level, one (Value -> Satisfaction, p=0.001) is significant at the p<0.01 level, and three others (Method -> Value, p<0.001; Outcome -> Satisfaction, p<0.001; Satisfaction -> Intent, p<0.001) are significant at the p<0.001 level. All path coefficients and their significance level are shown in Table 13.

Table 13: Path coefficients

| Path                  | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (|O/STDEV|) | P Values |
|-----------------------|--------------------|----------------|---------------------------|-------------------|----------|
| Method -> Satisfaction | 0.039              | 0.034          | 0.122                     | 0.324             | 0.746    |
| Method -> Value       | 0.425              | 0.424          | 0.121                     | 3.516             | 0.000    |
| Outcome -> Satisfaction | 0.494            | 0.497          | 0.125                     | 3.964             | 0.000    |
| Outcome -> Value      | 0.007              | 0.007          | 0.148                     | 0.049             | 0.961    |
| Problem -> Satisfaction | -0.067           | -0.062         | 0.097                     | 0.686             | 0.493    |
| Problem -> Value      | 0.138              | 0.138          | 0.118                     | 1.169             | 0.243    |
| Relationship -> Satisfaction | -0.047       | -0.014         | 0.166                     | 0.286             | 0.775    |
| Relationship -> Value | -0.166             | -0.176         | 0.158                     | 1.054             | 0.292    |
| Satisfaction -> Intent | 0.547            | 0.541          | 0.103                     | 5.310             | 0.000    |
| Service -> Satisfaction | 0.046            | 0.032          | 0.177                     | 0.257             | 0.797    |
| Service -> Value      | 0.383              | 0.389          | 0.154                     | 2.491             | 0.013    |
| Value -> Satisfaction | 0.453              | 0.443          | 0.130                     | 3.480             | 0.001    |

The predictive accuracy of the model is measured through the coefficient of determination, R². R² applies to the endogenous constructs in the model (Value, Satisfaction, and Intent). Adjusted R² accounts for the complexity of the model, so I will report and analyze these values. I include the R² values for reference. The adjusted R² values for the model in this study are shown in Table 14, along with the R² values in Table 15. The adjusted R² values for Satisfaction and Value are significant at the p<0.001 level, while the adjusted R² value for Intent (p=0.011) is significant at the p<0.05 level. The adjusted R² for the Value construct, as my main dependent variable is 0.452.
Table 14 Adjusted R² values

|          | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (|O/STDEV|) | P Values |
|----------|---------------------|-----------------|----------------------------|--------------------------|----------|
| Intent   | 0.288               | 0.293           | 0.113                      | 2.540                    | 0.011    |
| Satisfaction | 0.629           | 0.672           | 0.081                      | 7.730                    | 0.000    |
| Value    | 0.452               | 0.493           | 0.100                      | 4.530                    | 0.000    |

Table 15: R² values

|          | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (|O/STDEV|) | P Values |
|----------|---------------------|-----------------|----------------------------|--------------------------|----------|
| Intent   | 0.299               | 0.303           | 0.112                      | 2.678                    | 0.008    |
| Satisfaction | 0.663           | 0.702           | 0.074                      | 8.981                    | 0.000    |
| Value    | 0.494               | 0.532           | 0.092                      | 5.366                    | 0.000    |

Effect size, $f^2$, indicates the level of impact of each exogenous construct on the R² value of the endogenous constructs. $f^2$ is calculated as the change in R² of the endogenous construct when each exogenous construct is omitted from the model. I report $f^2$ values in Table 16. Naturally, $f^2$ applies to the significant paths in the model. In this model, Service -> Value (0.076) shows a small effect, and Method -> Value (0.179) shows a medium effect, while Value -> Satisfaction (0.308), Outcome -> Satisfaction (0.338), and Satisfaction -> Intent (0.426) all show large effects (Hair Jr et al., 2013).

Table 16: $f^2$ values

<p>|          | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (|O/STDEV|) | P Values |
|----------|---------------------|-----------------|----------------------------|--------------------------|----------|
| Method -&gt; Satisfaction | 0.002           | 0.021           | 0.030                      | 0.065                    | 0.948    |
| Method -&gt; Value          | 0.179           | 0.203           | 0.125                      | 1.433                    | 0.152    |
| Outcome -&gt; Satisfaction | 0.338           | 0.420           | 0.272                      | 1.242                    | 0.215    |
| Outcome -&gt; Value         | 0.000           | 0.021           | 0.030                      | 0.002                    | 0.999    |
| Problem -&gt; Satisfaction | 0.008           | 0.025           | 0.037                      | 0.218                    | 0.827    |
| Problem -&gt; Value         | 0.023           | 0.042           | 0.048                      | 0.491                    | 0.624    |</p>
<table>
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<tr>
<th>Relationship -&gt; Satisfaction</th>
<th>0.002</th>
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<th>0.041</th>
<th>0.055</th>
<th>0.956</th>
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</thead>
<tbody>
<tr>
<td>Relationship -&gt; Value</td>
<td>0.019</td>
<td>0.040</td>
<td>0.047</td>
<td>0.408</td>
<td>0.684</td>
</tr>
<tr>
<td>Satisfaction -&gt; Intent</td>
<td>0.426</td>
<td>0.480</td>
<td>0.285</td>
<td>1.495</td>
<td>0.135</td>
</tr>
<tr>
<td>Service -&gt; Satisfaction</td>
<td>0.001</td>
<td>0.026</td>
<td>0.042</td>
<td>0.036</td>
<td>0.972</td>
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<tr>
<td>Service -&gt; Value</td>
<td>0.076</td>
<td>0.094</td>
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<tr>
<td>Value -&gt; Satisfaction</td>
<td>0.308</td>
<td>0.365</td>
<td>0.252</td>
<td>1.222</td>
<td>0.222</td>
</tr>
</tbody>
</table>

**Results**

I show the estimated model in Figure 2. Significant paths are in bold. The analysis supports several of the hypotheses.

![Diagram](image)

**Figure 2: Estimated model with path coefficients and R² values**

First, I note that none of the control variables were significant in the model. Therefore, I exclude them from further discussion.
The path between Outcome and Value is not significant, so H1a is not supported. However, the path between Outcome and Satisfaction is significant, indicating support for H1b. The path between Method and Value is significant, so H2a is supported. However, the path between Method and Satisfaction is not significant, so H2b is not supported. The path between Service and Value is significant, so H3a is supported. However, the path between Service and Satisfaction is not significant, so H3b is not supported. Neither of the paths between Relationship and Value and Satisfaction is significant, so H4a and H4b are not supported. Similarly, neither of the paths between Problem and Value and Satisfaction is significant, so H5a and H5b are not supported. Finally, the path between Value and Satisfaction and the path between Satisfaction and Intent are both significant, so H6a and H6b are supported.

In sum, I found support for five of the twelve hypotheses. Of the eight constructs in the model, I found significant relationships involving six. Of the five antecedents to Value that were tested, two were significant antecedents to Value with one more as a significant antecedent to Satisfaction.

**Discussion**

The relationship between Outcome and Satisfaction may indicate that, in this sample, the projects that produced a usable outcome felt “good” to the respondents and that they were responding to the contentment of a job that produced a meaningful result. While we know that IT project failure produces dissatisfaction among buyers (Conboy, 2010; Kappelman et al., 2006), this finding provides evidence that the same may be true for sellers.

The relationship between Method and Value may indicate that the seller values one methodology over another. Methodology is generally considered a sound way to ensure that
results are produced and delivered within project time estimates and budgets (Boehm, 2000). This relationship between Method and Value may indicate that there are more tangible reasons for the seller to be comfortable with the methodology used in projects.

The relationship between Service and Value indicates that the buyer has influence over the value that the seller perceives from the transaction. This evidence may indicate that buyers should consider how “good” a client they are and how their responsiveness and professionalism could influence the outcomes of the transactions in which they engage. In particular, this relationship provides some additional support for the value of relational contracting (Argyres and Mayer, 2007; Mayer and Argyres, 2004) and reputation (Hennart, 1993; Mahoney and Qian, 2013).

In terms of my larger research question: Does the model of buyer value apply to the seller?, my results are mixed. Lack of support for several relationships in the Patterson and Spreng, (1997) model cannot be interpreted as refuting the related hypotheses. However, I cannot confirm these hypotheses for the seller with this analysis. Empirical support for the relationship between 1) Method and Value (H2a) and 2) Service and Value (H3a) indicates that the seller does derive value from non-financial aspects of transactions. In addition, the high adjusted R² for Value is encouraging, with two antecedents explaining 49.4% of the variation in the construct. In addition, the relationships between 1) Value and Satisfaction and 2) Satisfaction and Intent provide some evidence that a version of this model, with different antecedents, may be more informative regarding what the seller may value from the large number of possible transaction attributes.
Overall, the findings are encouraging regarding the goal of this research: begin the process of directly measuring seller value. While additional research is needed to tease out additional drivers of value for the seller, this research indicates that those additional drivers may be substituted into this model to increase the amount of variation ($R^2$) in Value that can be explained. With sufficient variation explained, it will be possible in the future to develop research that assesses the effect of governance form on the relative shares of value captured by each transaction partner in completed transactions. I more fully discuss implications for future research below.

Finally, those future models of transaction governance and value capture may be included in a new endogenous theory of ITO. This inclusion of value from ITO transactions will strengthen that theory by directly explaining how partners derive value when engaging in IT Outsourcing.

**Future Research**

A wide variety transaction attributes are possible antecedents to non-financial value for the seller in transactions. In this research, we studied five that have been shown to influence value for the buyer. The fact that the final relationships between Value, Satisfaction, and Intent hold for the seller’s context indicate that this model may be useful in assessing additional potential antecedents.

One possible driver of value for the seller is shown in Makadok and Coff, (2009). This theory explains that value is derived from ownership of the assets in the transaction. In ITO, the primary “assets” are often the people who solve problems and provide the services that are outsourced by the buyer. As those people increase their knowledge of how to provide the
outsourced services, their value to their employing firm should increase. While people cannot be owned, their continuing employment by the seller may be modeled as the change in value of assets used in the transaction. This would represent one step in empirically validating the Makadok and Coff, (2009) theory of hybrid governance forms.

During the data-gathering process, after I received responses on the items for the constructs, I briefly interviewed the project managers of this firm. I discussed with them their ideas of project attributes that may contribute to value. Without reporting on those discussions as research, I will report some of their thoughts for consideration for future research. Several of the respondents considered technical and professional growth of the employees involved in the various projects. Sometimes, this shaded over into the Service construct that we actually measured, but was more often an interaction with the client and learning how they work. A few respondents made interesting comments about the reputation of the firm being built from the reputation of its clients. One respondent indicated that it was easier to break through with some clients because the firm had worked with certain “big names” in the industry or the region. Another respondent felt that the firm’s staff was more energized when working with certain “name” clients. A final example relates to the technical nature of the project itself. A few respondents considered the level of technical challenge as an antecedent of value to the seller. Again, these respondents seemed to feel that a challenging project helped to energize the employees.

**Conclusion**

In conclusion, the findings are encouraging in that I was able to measure some non-financial value in this set of transactions. As research considers more aspects of non-financial value, I expect that we will be able to explain a larger percentage of the value construct. As it
stands, the research supports the continued development of models of governance for ITO transactions.
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| 4 | FSIntentC| 253"| 426"| 179 | 200 | 332"| 252"| 296"| 346"| 396"| 096 | 445"| .929"| .950"
| 5 | FSSat1   | 585"| 616"| 185 | 578"| 547"| 522"| 399"| 407"| 411"| 213 | 655"| .515"| .482"| 471"|
| 6 | FSSat3   | 586"| 584"| 355"| 482"| 534"| 512"| 513"| 517"| 484"| 214 | 636"| .535"| .496"| 488"| 750"

Chapter 4 References


Chapter 5. Conclusion

Through this dissertation, I examined the value of IT to the firm through the contribution of individual IT asset acquisition transactions. I applied Strategic Management theories to the IT context to improve their integration and application in IT research. My overall research objective was to establish a unifying cross-theory view of value creation and capture (Gibbons, 2005; Mahoney and Qian, 2013) and then to validate it in the IT context. Since the Strategic Management literature has several theoretical bases which can support such IT value contribution (Drnevich and Croson, 2013; Kohli and Grover, 2008; Schryen, 2012), the objective and contribution of this dissertation was to develop and support a model of value creation and capture that could more effectively theorize, and thus more effectively model and measure, the value of individual IT asset acquisition transactions to the firm. A major overall research contribution that emerged from this effort was the development of the concept of value channels. Thus, this dissertation offers a substantial contribution towards addressing major unresolved theoretical and empirical issues on value creation and capture in the Strategic Management literature, as well as contextual and phenomenological issues of persistent interest to the MIS literature and IT practitioners.

Review of the Dissertation

My dissertation consisted of a multi-method, three-essay research project, which examined how value creation and capture theory could be extended to the context of IT asset transactions, and thus how (and how much) such transactions contribute value to the firm.
Chapter 2, entitled “Triangulating Value Creation and Capture: Exploring Commonalities from Firm Theories with the Value-Price-Cost Paradigm,” reviewed some of the major Strategic Management theories on value creation and capture in transactions to develop a broader model of value creation and capture in hybrid transactions and the underlying concept of value channels. Chapter 3, entitled “Hybrid Governance and Property Rights: A Formal Model,” extended that broad model into a formal model of incentives and property rights in hybrid governance forms, thus validating the value creation and capture model theoretically. Chapter 4, entitled “Towards an Endogenous IT Outsourcing Theory: Validating the Value Component of ITO Transactions” constitutes a first step in empirically validating the formal model by developing an empirical measure of value for the seller in hybrid transactions in the IT Outsourcing context. In this final chapter, I review the objectives, contributions, implications, and conclusions of each of these three chapters, and then discuss the overall contributions and conclusions for the dissertation as well as offer some suggestions for future research.

**Chapter 2 Objectives**

In Chapter 2, I developed a conceptual framework for examining value creation and capture across Strategic Management theories of value in transactions. In this chapter, I developed an initial argument that there is only one actual amount of value captured by each party from a completed transaction. If this argument is correct, the theories that address value in transactions must be explaining a single phenomenon from different perspectives. Therefore, I utilized the VPC framework from the RBT literature (Peteraf and Barney, 2003) to analyze basic statements of the theories to determine how each addressed the core concepts of value creation, value capture, cost minimization, and value maximization. I then synthesized these considerations into a broader encompassing view of each concept. The primary result of this
synthesis was the value channel concept that guides the remainder of this dissertation. I described how the value channel concept fit back into the four core theoretical views of value creation and capture. Further, I described how the value channel concept helps explain broadly two of the common concerns across the theories: opportunism and bargaining.

Chapter 2 Findings and Implications

Based on the analysis in Chapter 2, I developed a new concept of value channels from the explanations of value creation and capture found in Strategic Management theories of value in transactions Bowman and Ambrosini, (2000, 2010). Value channels are based in assets, artifacts, and capabilities into which the transaction partners can store value. In this sense, a transaction creates value by moving value from one channel to another. The target channel may have greater value due to multiplicative effects, as in interest on a bank account, or by having a higher value to the party who has rights to that channel. The capture of that value is based on rights to the underlying asset, artifact, or capability through contract, ownership, or other means. Those rights either exist ex ante or are created or transferred within the transaction. A transaction may also transfer value by reassigning rights to one or more channels. The complexity of a transaction may be a function of how many value channels are involved. I now view investment and effort as acts that move value from one channel to another. Efficiency becomes the ratio of the amount of value taken from one channel to the amount of value it becomes when put in another channel. A canonical example of a value channel is maintenance effort on a productive asset. That maintenance effort changes the value of the asset and directs that change in value to the owner(s) of the asset.

Having defined value channels, I then proceeded in Chapter 2 to address how value channels integrate with each of the four core theoretical conceptions of value creation and
capture. I found that value creation (and destruction) is the transfer of value from one channel to another. Value capture is a partner’s ex post ability to collect the value in a channel, through ownership, contracting, or other rights to an underlying asset. I viewed cost minimization as efforts to find ways to transfer value between channels in the most efficient manner possible. Finally, value maximization is directing the value transfers toward those channels that the buyer values most, as compared to those that the buyer values less, or those with the highest relative efficiency.

Chapter 2 Conclusions and Contributions

In Chapter 2, I concluded that the value channel concept shows promise as a means to tie the theories of value in transactions together, thus enabling researchers to better understand how each should be applied. Further, I reinforced several research streams that attempt to find commonalities and address the big unified theory concerns of Strategic Management (Gans, MacDonald, and Ryall, 2009; Gibbons, 2005; Mahoney and Qian, 2013). Finally, I noted that research into a formal model of some or all of the theories could extend the value channel concept and that empirical validation of the concept would resolve remaining questions around how value channels work to hold and direct value to the transaction partners. In the next sections, I show how I addressed some of these research extensions in Chapter 3 and Chapter 4.

Chapter 3 Objectives

In Chapter 3, I continued the theoretical development and validation of the value channel concept through studying how a recent definition and taxonomy of hybrid governance forms may help resolve theoretical tension in two of the value creation and capture theories of Strategic
Management – IST and GHM. Governance forms that meet the recent IST definition of a hybrid governance form (Makadok and Coff, 2009) are common in practice, but the new definition had not been incorporated into GHM. Therefore, I developed a formal model that integrates IST and GHM and incorporates the new definition of hybrid governance forms. I believed that such a model would be critical in addressing our overall research theme: how does the cumulative value captured in IT acquisition transactions influence the value of IT to the firm? In addition, the formal model would theoretically validate the value channel concept and allow a more nuanced analysis of transactions than the typical make vs. buy analysis.

Chapter 3 Findings and Implications

I developed a formal model that combines the effects of incentives and property rights, along with interactions between them. This interaction supports and helps further define the concept of value channels from Chapter 2. This model incorporates the effects of the seller’s effort and the buyer’s investment on the value created in the transaction and on the buyer’s and seller’s payoffs, or shares of value captured. This treatment allowed me to perform optimization analysis for the payoffs as a function of the seller’s effort and the buyer’s investment. In this way, I was able to demonstrate formally the incentive mechanisms that motivate such investments. As expected, the formal model highlights value channels as components in the interaction between rights and incentives. Further, the formal model supports a new definition of transactions as the exchange, creation, and consumption of value channels. I also derived several testable propositions that could be used for future research to validate our model.

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6 Incentive Systems Theory (IST) and the Grossman, Hart, and Moore formulation of Property Rights Theory (GHM)
Chapter 3 Conclusions and Contributions

Through this chapter, I contributed to the IST literature by formally incorporating investment by the principal, which existing IST formulations lacked. Such an improvement is critical in applying the model to the IT context, in which the buyer often invests in efforts to determine, explain, and verify what the developed system should do when completed. A model that cannot account for this investment would be inapplicable to that context, and thus would not address my overall research theme. In addition, I incorporated the new IST-based definition of hybrid forms into GHM. This extension allows property rights based analysis of real transactions with governance forms that are neither pure market nor pure hierarchy. I expect additional analysis to find that conditions exist under which hybrid forms are the most efficient form of transaction governance, a radical departure from previous GHM findings. By combining GHM and IST, I developed property rights as a causal mechanism for hybrid forms in the taxonomy, answering a request for such an extension from the IST literature (Makadok and Coff, 2009). Through this research, I strengthened a mezzanine-level theory of industrial organization regarding how firms interact with each other. I noted that this level is a distinct theoretical domain in contrast to macro-level theories of firms interacting with the overall market and to micro-level theories of how firms organize internally to improve firm performance. In addition, I identified value channels within the model, thus theoretically supporting the value channel concept. In the next section, I show how I began the validation process of this model in Chapter 4.

Chapter 4 Objectives

In Chapter 4, I applied some of the findings of Chapter 2 and Chapter 3 to the IT outsourcing and development context. The literature that studies these phenomena has recently
seen difficulties in applying Strategic Management theories, notably TCE (Alaghehband et al., 2011; Lacity, Willcocks, and Khan, 2011), and debate over these difficulties continues in the more recent literature (Aubert and Rivard, 2016; Lacity and Khan, 2016; Schermann et al., 2016a; Schermann, Yetton, and Krcmar, 2016b). In arguing for a new, endogenous model of ITO, research has advocated a set of components that must be considered in such a model (Lacity et al., 2011), but that set does not include a component for the value captured by the transaction partners. I argued that a primary purpose of transaction governance is to guard value for both transaction partners and, when including the transaction governance form in ITO studies, value captured by the transaction partners must be considered. In order to do so, in this chapter I attempted to validate an existing model of buyer value (Patterson and Spreng, 1997) within the seller’s context in ITO transactions. The Patterson and Spreng (1997) model shows six drivers of value and satisfaction for buyers and, further, shows that value and satisfaction are related to repurchase intent. To match the seller’s context, I slightly modified the wording of the items in the instrument Patterson and Spreng used to measure value and applied the modified instrument to 66 IT completed transactions from a small consulting firm. I then replicated the Patterson and Spreng PLS analysis. Measuring seller value, along with buyer value, will allow future research to consider the value distribution between buyers and sellers in transactions, ITO and otherwise. In this way, a new theory of ITO can also consider value delivered to the transaction partners. So, my core research question in this study was: does the seller in a transaction perceive drivers of transaction value in ways similar to the buyer?

**Chapter 4 Findings and Implications**

My analysis provided evidence that two of the value drivers, Method and Service, identified by Patterson and Spreng are applicable in the seller’s context, explaining 49% of the
variation in reported value. Further, one of the satisfaction drivers was also applicable to the
seller. Finally, the evidence also supports the relationship between value, satisfaction, and intent
(to engage in future transactions with the buyer). These results provide evidence that sellers
perceive value in similar ways to buyers. Further, the results show that much of the seller’s
value perception can be explained by whether the seller was able to choose and utilize a
particular methodology and how well the buyer’s personnel responded to and interacted with the
seller’s personnel. However, additional drivers of perceived value can still be identified and
should provide a clearer picture.

Chapter 4 Conclusions and Contributions

Through this chapter, I was able to identify some important antecedents of value for the
seller. While the buyer’s value model was not completely supported in the seller’s context, the
fact that the evidence supported other facets of the model (i.e. the relationships between value,
satisfaction, and intent) indicates that the general model is applicable to the seller’s context.
Therefore, my findings in this chapter represent an important first step in measuring value to the
seller in IT asset transactions. The need for some additional research still remains to identify and
test further factors, or value channels, that contribute to the seller’s value from transactions. One
example is the reputation of the buyer; anecdotal evidence in this study indicated that a high
visibility client would likely help the seller acquire future business, which may be an important
driver of value in any present transaction.

Summary of the Dissertation

In this dissertation, I explored whether unresolved issues in the study of the value of IT
can be explained by how transactions create value and how that value can be divided between
transaction partners. I argued that different theories from Strategic Management (TCE, PRT,
RBT, and IST) have somewhat different views of the phenomena of value creation and capture. Through the creation of a broader view of value creation and capture, development of a theoretical model, and initial progress in empirically validating that model, I took steps to resolve some of the theoretical confusion that may underlie unresolved issues in understanding the value of IT from hybrid transactions to acquire IT assets. In addition, I set the stage for adding the concepts of transaction governance form and value creation and capture to an emerging theory of IT Outsourcing. Finally, through this research I developed the concept of value channels as a theoretical tool that can be used to further explore value creation and capture within the theories of Strategic Management. In the next section, I discuss the collective implications of this research project and then conclude with collective contributions and conclusions.

**Collective Implications for Future Research**

Having considered how the theories of Strategic Management may combine to inform research into the effect of individual IT transactions on the cumulative value of IT to the firm, I also wish to consider how scholars may be able to utilize, and develop more fully, the concept of value channels.

First, I demonstrated the value of taking a bottom-up approach to understanding the value of IT to the firm. I defined a lower bound of firm-level value of IT as the total value of the various IT asset transactions of the firm. However, I do not claim that the total value of IT to the firm is solely the collective value of completed transactions. In this sense, IT scholars may utilize these findings to determine the relationship between the value of individual IT asset transactions and the value of IT to the firm. A possible approach may be for future research to sum the value of individual IT transactions over time and assess the correlation to firm value. In addition, the value channel concept developed in this research has implications on the effective
development and implementation of IT systems. If scholars can isolate particular value channels within an implementation or development transaction, such as this research has done for seller value, future research can seek to determine how value is transferred to those channels most efficiently.

Second, I emphasized that the value channel concept is not constrained to the IT domain. Firms create value through transactions with other entities, both suppliers (of which IT is a specific example) and customers. In Chapter 3, I discussed the implications of this mezzanine-level theory of how firms interact with each other. To the degree that such exchanges utilize hybrid governance forms, rather than hierarchy or market forms, the arrangement and management of value channels is critical to the performance of the transaction in terms of value creation and capture. In this sense, the value channel concept naturally applies to other domains, such as supply chain, outsourcing, and merger and acquisition (M&A). As an example, future outsourcing research might explore the means by which value is actually transferred between value channels. Such research may consider the collective value channels of producing the product with various coalitions of partners who may have different value channels of differing sizes.

Third, and more broadly, the value channel concept may allow extension of the theories of Strategic Management, in particular, the four that contributed to the creation of the concept. As an example, a value channel analysis shows opportunism, the canonical problem of TCE, as one partner placing value in a channel to which the other partner already has rights or can establish rights and, thus, can claim value from that channel based on those rights. Looking at the often used example of the seller placing a factory near the purchaser, this analysis shows that, while the seller owns the location of the factory, the location is only of value because it produces
the value channel of *proximity to the buyer*. However, neither partner solely owns that proximity, as either partner could, in theory, increase it or decrease it unilaterally. The seller, in this example, puts value in the proximity channel by investing in a location. However, the seller does not solely own the proximity channel. The buyer’s partial ownership allows the buyer an opportunity to access any value placed in that channel. The buyer may leverage this partial ownership to renegotiate price, for example. Such renegotiation demonstrates opportunism on the part of the buyer. Future research may utilize a similar value channel based treatment on the canonical problems of the other theories.

Fourth, and even more broadly, the concept of value channels has implications for additional theoretical streams. I consider two examples: stakeholder theory and entrepreneurship. I envision potential applications of the value channel concept to these literatures in the remainder of this section.

The value channel concept may aid stakeholder theory via the notion of externalities. Externalities can be viewed as value channels that are increased or decreased by the transaction and to which parties other than the transaction partners have rights. I can then view stakeholders as those parties who have rights to value channels influenced by the transaction. An example is a factory located on a river. Stakeholders are all of the parties who have or can acquire various rights to the river, along with the associated value channels. However, in various ways, the factory can unilaterally put value into or remove value from the river. In this way, the activities of the factory can increase or decrease value channels to which the stakeholders have rights without consulting or compensating those stakeholders.

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7 I do not claim to fully comprehend these two literatures or to be a stakeholder theory or entrepreneurship scholar. My aim in these examples is not to be right, per se, but perhaps to be creatively wrong in suggesting ties to the two literatures.
In addition, the entrepreneurship literature may benefit from the value channel concept as a means to incorporate directly technological change into entrepreneurship. Technology, as the harnessing of natural principles to serve human purposes (Arthur, 2009), influences both how value channels are attached to assets and how value is moved from one channel to another. As an example, consider the current oil extraction process of fracking, through which oil is extracted from smaller pools or fissures than would be practical under other technologies. This technology improved the value channel of oil extraction by using the value channel of high pressure liquid. In this manner, the technology made certain land rights more valuable and allowed entrepreneurs to devise means of creating and establishing rights to value channels based on those land rights. Viewed from this perspective, entrepreneurship may be the application of technology (broadly defined\textsuperscript{8}) to the problem of creating value channels and efficiently moving value between channels. Therefore, using the value channel concept, I can define an entrepreneur as a party that envisions a new value channel or a new way to move value between existing channels, or both. In this sense, technology becomes firmly embedded into modern entrepreneurial thinking. In the next section, I consider the overall contributions of this dissertation and underlying research.

\textbf{Collective Limitations of the Research}

As I note at the outset, my intent for the analysis and synthesis in Chapter 2 is to develop a crude look at the whole regarding the view of value creation and capture from four mostly transactional theories of strategic management. Therefore, I began from rudimentary, basic statements of each theory’s view of value creation and capture. However, each of these theories has been extended and refined far beyond those basic statements through strong and intensive research.

\textsuperscript{8} By “broadly defined”, I mean almost any process, specifically including \textit{management technology}, which harnesses the natural principles of human and organizational behavior to serve human purposes.
research. As such, there is a significant amount of nuance around each theory that is necessarily lost in my analysis. Nevertheless, I believe that scholars who specialize in each theory can utilize the concept of value channels to further refine and extend each theory’s explanation of value creation and capture phenomena.

The foundation of this research is the simplification that a single, discrete amount of value is created by the transaction and one discrete portion of that value is captured by each transaction partner. In this sense, I only model individual transactions and only as a snapshot in time. Exchange transactions have long-running implications for both partners, such as relationship and reputation implications. In this sense, the model, as shown in this research, is temporally limited. A complete analysis of that limitation constitutes a significant research project; as such, it is out of the scope of the present research. However, I note that the concept of value channels likely could be extended to incorporate long-running streams of value.

Finally, in this research the concept of value channels is so broad that it could include almost anything. A definition that does not exclude or limit the concept cannot stand as a final definition. As such, the concept of value channels, rather than a specific definition, represents the contribution of this research.

**Collective Contributions and Conclusions**

Through this dissertation research, I examined the notions of value creation and capture in transactions in order to more fully explore the value of IT to the firm. I developed a new concept of value channels from the explanations of value creation and capture found in Strategic Management theories of value in transactions. I created a formal model of value from two specific theories to expand the concept of value channels. Finally, I evaluated aspects of the
The value channel concept allows us to redefine the concept of transaction governance as the transaction partners’ identification, arrangement and management of value channels. This includes decisions on contracts, ownership, and other means to establish and protect rights to artifacts, assets, and capabilities in such a way as to enable the owner of those rights to derive value from them. Transaction governance also includes means to manage incentives for investment and effort on the part of both partners.

In the same sense, value channels allow us to consider the array of transaction governance forms from a different perspective. Perhaps the most common current perspective is that all governance forms lie on a one-dimensional continuum with pure, perfect markets on one end and hierarchical governance on the other, with hybrid forms in between. Makadok and Coff, (2009) expanded that perspective showing that hybrid forms are not on a one-dimensional continuum, but instead occupy a space of at least three measurable dimensions. When I add in the concept of value channels, that space can be defined by the value channels that the transaction partners choose to place “on the table” in the transaction. I expand on this thinking in the next two paragraphs by refining the notion of market and hierarchical transaction governance. However, in between these two theoretical extremes lie the great bulk of actual
transactions and the large number of variations in governance form. A large number of value channels may be in play, forcing the transaction partners to consider and manage them via hybrid governance forms.

From this perspective, a transaction on a perfect market, by definition, includes only two value channels: ownership of the asset to be exchanged and the money paid. I now view market governance as an effort by the transaction partners to simplify the transaction by agreeing to limit the number of different variables in the transaction by limiting the number of value channels involved. As such, in some cases a market governance form is very efficient. On the other hand, such limitation of value channels implies adherence to certain assumptions. As an example of such an assumption, perfect market governance requires that the asset be completely defined, ex ante, so the buyer can value it and the seller knows the cost of producing it. If this assumption (among others) is met, a market is particularly efficient. However, the existence of and desire for other value channels such as warranties, delivery dates, transaction costs, etc. may cause a market transaction to be more difficult, effectively forcing the transaction partners into a hybrid form by forcing consideration of more than two value channels.

At the other extreme, the hierarchy also has only two value channels: the wage paid to the worker and the worker’s effort, completely directed by the manager. I now view this, also, as an effort to control value channels and limit the number involved in the transaction. As such, in some cases a hierarchical governance form is very efficient. On the other hand, such limitation of value channels implies adherence to certain assumptions. In this case, the result of the transaction does not have to be perfectly defined, but the behaviors required in order to produce it must be. The principal must be able to define the behaviors completely so that the principal can value them and the agent can assess their cost. If this assumption (among others) is met, a
hierarchy is particularly efficient. However, the existence of and desire for other value channels such as decision-making by the agent, ownership of productive assets, etc. may cause a hierarchical transaction to be more difficult, effectively forcing the transaction partners into a hybrid form by forcing consideration of more than two value channels.

In this way, the value channel concept allows us to distinguish between market governance and hierarchical governance: both have limited, but different, value channels. As such, further consideration on value channels may allow future researchers to reconsider the theory of the firm. While a full treatment of this topic is beyond the scope of this dissertation, I posit (based on the notion of synergistic incentives from Makadok and Coff, (2009)) that two value channels may present complementarities in the sense that the value of a unified pair of rights to both channels is greater than the sum of the values of rights to each channel. If such complementarity can be identified and measured, it could point to a previously unidentified reason for the existence of the firm – a firm is capable of owning joint rights to a multiple value channels, while a market is not. In this sense, the firm provides and captures value through its capability of jointly owning rights to complementary value channels. In this way, under certain circumstances, the organization of production within the firm may be more efficient than the organization of production on the market.

I reviewed some implications of the value channel concept on the theories I analyzed in chapter 2 (RBT, TCE, PRT, and IST). Those implications include new ways to think about bargaining and opportunism (or competition), which are prevalent in all four theories. As I noted in chapter 2, the present state of research into value creation and capture exposes at least three current research streams: market frictions (Kim and Mahoney, 2010; Mahoney and Qian, 2013), a formal integrative framework for theories of the firm (Baker, Gibbons, and Murphy, 2008;
Gibbons, 2005), and the VCM (MacDonald and Ryall, 2004; Ryall, Montez, and Ruiz-Aliseda, 2013). In the remainder of this conclusion, I will expand on the connections between those streams and this one. Space does not permit a full treatment, but I can posit hints at connections.

The market frictions stream identifies information asymmetry, among others, as a market friction (Mahoney and Qian, 2013). It may be possible to define information as a value channel in the sense that value can be put into an information channel and the channel is owned by the entity that ‘knows’ the information. Further evidence can be found in the idea that information asymmetry, itself, has value (Makadok and Barney, 2001). Finally, information can be bought through depleting another value channel such as time or money. Based on these premises, I posit that value channels are or can be made to be associated with market frictions. The precise nature of that association is a subject of future research.

The integrative framework stream seeks a unifying concept that can demonstrate that each of the various theories are special cases of a currently unidentified model or construct. In Chapter 2, I presented an analysis of bargaining, which is a core feature of all four theories. This applicability of the value channel concept to each of the four theories may indicate that value channels are one such underlying construct. Future research and theoretical development may extend and deepen the connections between value channels and each of the four theories.

As I noted in Chapter 2, VCM explains that firms compete for transactions based on their next best alternative to capture value, similar to the concept of a reservation price. VCM models competition for transaction partners as the primary driving force in the selection of transactions. In cases where the value created in the transaction exceeds the sum of the reservation values, VCM posits that the transaction partners bargain over the additional \textit{surplus} value. In this sense,
VCM models competition for transaction partners and bargaining as the *only two forces* that drive value capture in exchanges (MacDonald and Ryall, 2004; Ryall et al., 2013). By applying the value channel view of bargaining from Chapter 2, I may be able to analyze more closely the actions of the transaction partners in this scenario. Further, in Chapter 2, I defined bargaining as offers to exchange rights to value channels. Transaction partners may still compete, within the transaction, to capture more of the surplus. By viewing this competition from the perspective of one transaction partner, I now see it as an attempt to exchange a value channel that has relatively less value for one that has relatively more value. In this sense, it may be possible to show competition over value channels to be the *single force* that drives value capture in exchanges, thus resolving a puzzle in the VCM view.

In conclusion, the research detailed in these essays has aided the development and application of a concept that may have far-reaching implications. The value channel concept may be ripe for extensions from the various literature streams mentioned above, along with others not mentioned. Continuing investigation of the value channel concept for further definition and theoretical application will build on the concept and may find that value channels form a basis for a broader understanding of the transactions that are the lifeblood of the firm.
Chapter 5 References


