

Cognitive Antecedents to the Knowledge Asset Outsourcing Decision

by

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ABSTRACT

In the current knowledge economy, the decision on whether to outsource knowledge assets is arguably the most important decision in operations and supply chain management (OSCM). However, the theories of transaction cost economics (TCE) and the resource-based theory (RBT) are inconsistent in their ability to predict, describe or explain knowledge outsourcing decisions. Currently, a theory to explain this important OSCM decision does not seem to be available. This dissertation takes a view that strategic decisions like that of knowledge asset outsourcing are made by a two step decision process where (1) an individual level cognitive process where managers generate their solutions and (2) a firm level social process where managers seek to influence other managers about their opinion. Part I uses a behavioral experiment to understand how managers form their solutions to the knowledge outsourcing question. The part tests if the psychological closeness to a task being outsourced i.e. the task affinity and self-interest influences the managers to subvert the rational decision process and make “favorable” outsourcing decisions. Additionally, it also tests if the influence is indirect and mediated by the perception of asset specificity (TCE variable) and core competence (RBT variable). Part 2 adopts a naturalistic paradigm and conducts case study research to understand how these cognitive managers with different mindsets try to influence the firm decision. The structuration theory framework is adopted to study 11 decision opportunities and frame a typology of decision processes that are used by managers. The parsimonious typology has 4 ideal types based on the nature of data exchange (naive and involved) and the nature of mindset exchange (naive or involved). The dissertation offers a comprehensive understanding of how knowledge asset

outsourcing decisions emerge. It aligns the strategy research in OSCM field to the current beliefs in strategic management. The typology can be used to develop contingencies that suggest the type of decision process to use in different conditions. The experiment validates that TCE and RBT influences how managers make decisions but shows that task affinity and self-interest influences the perception of core competency and the outsourcing decision.

DEDICATION

I dedicate this dissertation to the five women who make my life worth living – my mother, my mother in law, my sister in law, my daughter and my wife.

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CHAPTER 1

INTRODUCTION

फरेब-ए-नज़र है सकुन-ओ-सबात, तड़पता है हर ज़र्रा-ऐ-क़ायनात

Fareb-e-nazar hai sukoon-o-sabaat, tadapta hai har zarra-e-kayanat

Being stable is a mere illusion of eyes, for every atom in the universe constantly trembles

Allama Iqbal

Transaction cost economics (TCE) and the resource-based theory (RBT) have reasonably been able to explain the outsourcing decisions of physical assets (Tsay et al., 2018). Accordingly, products that are core, or have a high risk of opportunism are likely to be manufactured by the firm while non-strategic and routine products that have multiple suppliers are likely to be outsourced (Barney, 2012; Williamson, 2008). Individual managers when making the outsourcing decision for physical assets have been found to operate as per the tenets of TCE and RBT (Mantel, Tatikonda, & Liao, 2006). Also, anecdotes like that of Coke outsourcing everything else but the syrup and most automobile companies outsourcing everything except assembly seem to support TCE and RBT (Elmore, 2014).

However, these theories seem to have limitations in being able to explain the knowledge asset outsourcing (KAO) decision. Here, KAO refers to outsourcing non-standard tasks that cannot be adequately defined by explicit documented procedures alone (Alvesson, 2004). Research and development (R&D) is one such knowledge task that cannot be accurately defined with documents alone. Here, while most automobile companies with electric vehicles retain control of R&D processes for lithium batteries,

Tesla has chosen to completely outsource to Panasonic (Zuleta, 2017). Similarly, airlines have risked creating dependency on suppliers by outsourcing critical maintenance activities and effectively losing skills to ever conduct maintenance activities in-house again (Reed, 2018). Thus, anecdotal evidence suggests KAO decisions in practice are inconsistent with TCE and RBT theoretical predictions.

This inconsistent, atheoretical decision making has also been noted in the academic literature. Ellram, Tate, and Billington (2008) claim that firms do not give adequate importance to the risks of asset specificity in outsourcing knowledge assets. Further, Quinn and Hilmer (1994) show that firms are not averse to outsourcing core knowledge resources. Owing to these limitations, Lacity, Willcocks, & Khan (2011) call for researchers to move away from the standard economic theory and towards specifically generated theories for knowledge asset outsourcing research.

The ownership and control of knowledge assets are believed to be a significant contributor to a firm's competitive advantage (Teece, 1998). However, based on the current literature, we do not seem to have an ability to accurately describe how firms make the decision regarding ownership and control of knowledge assets. Also, the inconsistency of TCE and RBT in explaining KAO casts aspersion on these two dominant theories in operations and supply chain management (OSCM) research (Rindfleisch & Heide, 1997). This calls for a detailed examination of the KAO decision that is not constrained by the economic theories (Foerstl, Kirchoff, & Bals, 2016).

Since TCE and RBT have been consistent in explaining the outsourcing decisions of physical assets but not consistent in explaining the KAO decision, we examine the difference between the two assets. Specifically, while the dimensions of physical assets

are tangible, the dimensions of knowledge assets are more intangible (Teece, 2000). Also, while the decision to outsource physical assets is concerned with the transfer of codified processes, the decision to outsource knowledge assets is more concerned with the transfer of tacit information. Owing to this intangibility and tacitness, it is likely that the decision could be influenced by the perception and cognitive ability of the decision maker (Dearborn & Simon, 1958; Loch, 2017). That is, behavioral factors that affect managerial cognition could influence the decision to outsource knowledge assets. While the role of cognition has been alluded to in the literature, we have very little research to examine the validity of these suggestions and, thus, to gain a better understanding of the KAO decision (Foerstl et al., 2016). As such, in this dissertation, we attempt to answer these questions: *Does managerial cognition affect the knowledge asset outsourcing decision? How is the process of interaction associated with a comprehensive KAO decision?*

Extant behavioral outsourcing research has maintained either an individual manager or a firm level of analysis (Ellram et al., 2008; Mantel et al., 2006). However, unstructured strategic decisions like KAO decisions, usually involve an interaction of multiple levels. Managers concerned with the decision first construct individual level solutions. In the next step, the managers interact and seek to impose their solution on other members of the firm. (Kaplan, 2008; Shrivastava & Grant, 1985). Based on this model, we divide the dissertation into two parts – (1) the formation of a solution by individual managers and (2) the interaction among the individual manager on other managers. We take the cognitive approach for the first part and a sociological approach in the second. Using multilevel theorization, our study follows the recommendation for a

multilevel approach in supply chain management research (Carter, Meschnig, & Kaufmann, 2015).

Regarding the first part of this dissertation, substantial literature exists on managerial decision making on the formation of solutions by individual managers for strategic operations decisions. Yet, few studies examine the outsourcing decision. An exception is Mantel et al. (2006), who show that when informed about the status of a product and the possibility of supplier hostage, managers make outsourcing decisions in line with TCE and RBT. Since the participants are explicitly and objectively apprised about the product status and hostage possibility, cognition would have a minimal role to play in the decision making. We leverage this existing stream by letting the participants' cognition play a role in creating a perception about the status and hostage possibility. We conduct this study through the use of a vignette-based experiment.

In the vignette, we test for the influence of task affinity and self-interest driven biases on the individual manager's propensity to recommend outsourcing of knowledge assets. In doing this, we also test for the applicability of TCE and RBT in KAO decisions. We conduct the experiment on practicing managers and MBA students in India. We take adequate care to ensure the validity of our experimental procedure (Shadish, Cook, & Campbell, 2002). We find that self-interest has a significant impact on the outsourcing decisions made by managers. Self-interest not only subverts the normal decision process, but also influence how the manager perceives decision variables like asset specificity and core-competency. This part shows that managers use TCE and RBT recommendations to decide on outsourcing but, cognition can bias the knowledge asset outsourcing decisions.

Regarding the second part, we investigate how the cognitively biased managers interact and share data and ideas to arrive at a firm level decision. We offer a typology of the process used by managers for this interaction. The typology presents a parsimonious representation of the decision processes that individual managers follow in imposing their solutions on other members of the firm. We use the structuration theory to generate the typology through an inductive case study approach (Jarzabkowski, 2008). The typology is based on the mode of data exchange (naïve, involved) and the mode of mindset exchange (naïve, involved). Additionally, the cases show that firm level decisions emerge because of complex interactions between managers and that TCE and RBT may not directly influence the firm level decision.

Research contribution

As we describe earlier, we are not able to reliably explain the important decision of knowledge asset outsourcing. The primary aim of this dissertation is to attempt to change this. We realize that creating this change would be a difficult task for one dissertation, so we offer a pathway to that change. We document eleven cases of the knowledge outsourcing decision and sieve out four ideal types of decision processes used by managers to make the knowledge outsourcing decision. Knowledge asset outsourcing decision can be explained by constructing an interaction of these types. Researchers can use the pathway of the typology to explore contingencies of the conditions under which the typology leads to better decisions.

Knowledge asset outsourcing, and strategy in general, has been examined by very simplistic models on either individual or firm level of analysis in OSCM. We attempt to

use the current understanding of strategy and conduct a multilevel analysis for the knowledge asset outsourcing decision. We adopt the position that strategy making is a social process (Hendry, 2000). Here, we contribute by aligning OSCM strategy research with the strategy research. Through this, we hope to extend the boundaries of OSCM strategy research and motivate researchers to use our cognitive and sociological approach.

Our dominant theories of TCE and RBT have inconsistent results. There are calls to altogether abandon these theories and develop alternate theories (Poppo & Zenger, 1998). In this dissertation, we show that theories do have a limited application. In that, individual managers' solutions are aligned with the theoretical prescriptions, however, the firm level decision may not be driven by these theories. We hope that this result can drive a more focused application of TCE and RBT.

By our focus on the impact of cognition on knowledge asset outsourcing decisions, we hope to contribute to the literature on behavioral operations. This field has predominantly stayed restricted to transactional and routine issues like newsvendor problems, contracting, ordering, queueing and trust (Donohue & Schultz, 2018). In line with the literature on behavioral strategy, we hope to elevate our field to use behavioral variables to examine strategic issues like the knowledge asset outsourcing decision (Powell, Lovallo, & Fox, 2011).

In this dissertation, we conduct multilevel analysis at individual and firm levels to induce realism and mirror the actual outsourcing decision making process followed by firms. We model the firm as a coalition of different interests and hope to show that the emergence of decisions may not strictly follow the rational decision making process

(Cyert & March, 1963). We believe that this model of the firm lends itself to other strategic and unstructured OSCM decisions like buying of capital equipment, plant location decisions, environment strategy, distribution network design where actual decisions have often been found to differ from theoretical prescriptions (Bergman et al., 2016; Souder & Bromiley, 2012).

CHAPTER 2

LITERATURE REVIEW

Knowledge asset outsourcing involves the transfer of ownership of knowledge assets and can confer a competitive advantage to firms (Holcomb & Hitt, 2007; Teece, 1998). However, making the decision by accounting for the benefits of cost reduction and supplier expertise, and the limitations of loss of control and loss of future capability can be extremely challenging (Barthelemy, 2001; Bidwell, 2012). Key reasons for this challenge are that the knowledge outsourcing decision (1) is multidimensional and needs inputs from multiple cognitively different agents (Laios & Moschuris, 1999), (2) is dependent on the previous decisions taken by the firms (Brewer, Ashenbaum, & Carter, 2013), and (3) constrains the future options for the firm (Handley & Benton, 2009). This interdependency across agents, path dependence and temporal effect makes the KAO decision strategic (Leiblein, Reuer, & Zenger, 2018).

Not only is the KAO outsourcing decision strategic, but it can be argued that the structure of supply chains evolve because of successive outsourcing decisions (Choi & Hong, 2002). It is probably because of the strategic nature and its association with the supply chain structure that OSCM researchers have been fascinated with outsourcing. The decision has been studied using multiple methods and at multiple levels of analysis (Tsay et al., 2018). A majority of these studies have either used transaction cost economics (TCE) or the resource-based theory (RBT) as a key theoretical construct for examining the outsourcing decision. In the literature review, we start by reviewing the literature on the outsourcing of knowledge assets with the background of TCE and RBT.

Next, we describe knowledge assets and outsourcing research for knowledge assets to show that the decision is likely to be influenced by cognition. We then review the literature on strategic decision making and outsourcing decision making.

Outsourcing of Knowledge assets

Theory of TCE and RBT in outsourcing

TCE can be attributed to the seminal paper, *The Nature of the Firm*, by Coase (1937). He assumes that markets are always more efficient than producing internally if not for the existence of transaction related costs. Williamson (1981) refines this concept and specifies the assumptions of bounded rationality and opportunistic suppliers.

Bounded rationality refers to the cognitive inability of buyers and suppliers to consider all aspects of the decision. This inability leads to buyers and sellers not able to fathom every aspect of the transaction and the contracts thus developed are incomplete – the contracts do not provide a clear remedy for all perceivable eventualities during the life of the contract. Since the suppliers are opportunistic, they are likely to use the incompleteness to their own advantage. In other words, when the incomplete contract does not provide clear guidance, the opportunistic suppliers are likely to give preference to their individual objectives rather than the established buyer–seller norms.

Thus, any transaction that provides suppliers a substantial opportunity to be opportunistic should be done within the firm. To avoid providing an opportunity to opportunistic suppliers, Williamson (2008) advises that transactions characterized by high asset specificity, high uncertainty, and high frequency must not be outsourced. High uncertainty transactions would pose a difficulty to write complete contracts, and thus

provide opportunities for suppliers to be opportunistic. Similarly, tasks that entail a high number of transactions would also provide more opportunities. Thus, transactions that entail higher uncertainty or higher frequency should be done within the firm.

Researchers have extensively focused on the role of asset specificity in the outsourcing decision making and asset specificity is believed to be the most important decision making factor (Williamson, 1985, p. 56). Specific assets represent resources whose value is limited to the transactions, that is, without the transactions, these resources have very little value. If the buyer has high investments in such transaction specific assets, it could become very expensive for the buyer to move out of the transactions and change suppliers or bring the assets back within the firm. The suppliers of services to buyers heavily invested in specific assets thus have a higher opportunity to be opportunistic.

Fixed location of raw materials, machines dedicated for a specific purpose and specially trained employees are examples of site, physical asset, and human asset based specificity (Williamson, 1981). For example, co-located suppliers allow manufacturing facilities to develop very stringent inventory and delivery norms. If changing these norms is difficult, the manufacturing facility will find it difficult to switch to a distant alternate supplier. In the case of intangible knowledge assets, fixed procedures are also known to lead to procedural asset specific (Zaheer & Venkatraman, 1995). Procedural assets specificity includes the costs associated with designing and managing the procedures specific for a buyer-supplier relationship. Training the supplier for specific software is an example of such procedural specificity.

A key implicit assumption in TCE is that the capabilities of firms are homogenous (Mayer & Salomon, 2006). That is, TCE assumes that the buyer and the supplier are equally capable and that the decision to outsource depends only on the transaction costs. RBT departs from this assumption and attributes the outsourcing decision to the heterogeneity of capability among firms. RBT explicitly recognizes that outsourcing could happen because the supplier has a better capability (Barney, 2012) Unlike TCE, which makes the external market as the locus of outsourcing decision, RBT has a focus on the internal capabilities of the firm. Also, while TCE seeks to reduce the risk of opportunism, RBT attempts to maximize growth (Mahoney, 2001). Proponents of RBT model a firm with limited resource generation ability and advice that processes that generate *valuable, rare, inimitable and non-substitutable* (VRIN) are core competencies and must be done in-house (Barney, 1991). RBT implicitly assumes opportunistic suppliers and recommends not outsourcing core products since that could lead to the creation of specific assets (Tsay et al., 2018).

The knowledge based view (KBV) can be considered to be a specific case of RBT that considers knowledge as a VRIN resource (Grant, 1996). KBV extends the idea of transferability (immobility) of resources from RBT to suggest that processes for which knowledge can easily be transferred across organizational boundaries could be outsourced (Barney, 1996). The theory makes a distinction between explicit (know-what) and tacit (know-how) knowledge and claims that tacit knowledge is more difficult to transfer than explicit. Also, in certain cases, the knowledge of the previous process may be necessary to conduct the current process. KBV prescribes that processes with high tacit knowledge and when knowledge transfer is essential should not be outsourced.

The external market focus of TCE and the internal capability focus of RBT present complementary perspectives to analyzing the outsourcing decision (Madhok, 2002). The complementarity is driven by the fact that both theories assume homo-economicus agents – boundedly rational, self-interested and opportunistic (explicitly for TCE and implicitly for RBT). We can say that the minimization problem of TCE and the maximization problem of RBT share a primal–dual relationship (Mahoney & Pandian, 1992). Another key and common assumption in both theories is that the decision variables (asset specificity, core competence, etc.) have a certain fixed value that the firms must search for and apply in decision making (McIvor, 2009). Accordingly, asset specificity is operationalized as a transaction level variable that has a specific value for a given outsourcing decision and is based on the suppliers’ risk of being opportunistic (Williamson, 2008). Similarly, it is believed that firms can objectively assess the exact assets that confer core competence depending on “VRIN”ness (Valuable, Rare, Inimitable, Non-substitutable) of the assets (Javidan, 1998).

In spite of the acceptance of TCE and RBT in OSCM outsourcing research, multiple theoretical limitations have been pointed out. Conceptually the myopic transaction focus of TCE is different from the relationship based and long term focus of actual managers (Ghoshal & Moran, 1996). Papers reviewing TCE and its application have found weak consistency for asset specificity and other TCE variables in explaining outsourcing decisions (Carter & Hodgson, 2006; David & Han, 2004). Moreover, as against the assumption of objective values for the TCE variables, researchers have proposed that these could be perceptual (Buckley & Chapman, 1998). Proponents of the stewardship theory claim that the base assumption of opportunism is invalid (Davis,

Schoorman, & Donaldson, 1997). Lastly, some researchers believe that the mechanism of TCE's propounded influence has not been adequately validated (Tsang, 2006).

Similarly, RBT has also been extensively critiqued (Kraaijenbrink, Spender, & Groen, 2010; Priem & Butler, 2001a, 2001b). The prescriptions of RBT are criticized for being tautological – the definitions of valuable resources and competitive advantage feed off each other (Priem & Butler, 2001b). The word 'resource' is expressed as being vague and without boundary conditions. Both these conditions restrict RBT from being called a theory. Also, though RBT is about internal resource capability, the value of the resources is determined by the competitive environment (Miller & Shamsie, 1996). Hence RBT is not truly a theory about internal capability but is about the external environment based internal capability. Besides, while RBT has been found to be capable to post hoc explanation, its predictive power is limited (Kraaijenbrink et al., 2010).

Despite these criticisms, the theories have been very well accepted in OSCM research. Here we refer to suggestion from Box (1976) who claimed that every model, since it is essentially an abstraction of the real world, is flawed. However, some models are useful. And, as academicians, our role can be to qualify and improve these models. We take this approach in this dissertation to examine the applicability of TCE and RBT in KAO decision. That is, rather than assume or disregard TCE and RBT as theories of outsourcing, we explore their validity. We next review the literature in operations and supply chain management (OSCM) field on outsourcing using TCE and RBT and then move on to describing the strategic decision process for the outsourcing decision.

Knowledge Assets

Given the open markets, it is believed that product led competitive advantages have leveled off – since most firms have similar access to technologies and raw materials. So, the know-how to effectively transfer the raw material into finished products, and the ability to use technologies is considered to be a new source of competitive advantage (Teece, 2000). For example, despite using aircraft that are similar to the other airlines, Southwest Airlines can turnaround the planes considerably faster than other airlines¹. Similarly, in spite of falling research productivity in the pharmaceutical industry, AstraZeneca has been able to consistently increase its research output (Morgan et al., 2018). These examples highlight the role of know-how in creating performance heterogeneity between firms (Grant, 1996).

Such “know-what” and “know-how” that enables competitive advantage is labeled as KA (Teece, 1998). This represents the bundles of intangible resources that allow firms to better exploit the physical assets. The bundles can include expertise, data, knowledge documents, learning and policies and procedures (Freeze & Kulkarni, 2007). These knowledge bundles are dynamic in nature and future value of knowledge dependent on the current state (Winter, 2003). Since outsourcing of knowledge assets transfers the ownership of the knowledge assets outside the firm, it reduces the current and possibly the future value of knowledge assets in the firm (Gray, Tomlin, & Roth, 2009).

¹ <https://www.npr.org/2015/06/28/418147961/the-man-who-saved-southwest-airlines-with-a-10-minute-idea>

Another way to look at knowledge assets is to compare them with physical assets. Physical assets amplify human physical limitations in accomplishing a task, while knowledge assets amplify the cognitive limitations in accomplishing a task (Alvesson, 2004). That is, knowledge assets aim to help manage the ambiguity and complexity in executing a task (Alvesson, 1993). This picturization of knowledge assets is useful for this dissertation since the role of knowledge assets is to manage ambiguity and complexity suggests that the value of the knowledge assets would depend on the perception of ambiguity and complexity – and this could differ within the organization. We return to this topic of differing perceptions later in the review.

OSCM researchers have used the idea of KA to explain different phenomenon like the variation in six sigma project success (Anand, Ward, & Tatikonda, 2010), quality management's association with firm performance (Linderman et al., 2004), learning and task performance (Letmathe, Schweitzer, & Zielinski, 2012) and entrepreneurship (Gaimon & Bailey, 2013). The key features about KA that stand out from these articles are (1) explicit and tacit nature of knowledge (Edmondson et al., 2003), (2) unique for each firm (Loch, 2017), (3) strategic and complex (Freeze & Schmidt, 2015) and, (4) individual and organizational level of existence and (5) challenging to transfer (Kim, Hur, & Schoenherr, 2015). To understand the challenges associated with the KAO decision, we will discuss these features.

Explicit and tacit nature: The explicit and tacit dimensionality has been used most often for classifying knowledge. Explicit knowledge refers to objective “know-what” that is available in a codified format and is thus easily transferable. Tacit knowledge, however, is the subjective “know-how” that is available to individuals or groups and thus

not easily transferable (Polanyi, 1967). If we define knowledge as a framework imposed on information, explicit knowledge involves a frame that is provided by the organization and thus the frame is uniform for all organizational participants. Tacit knowledge involves a framework imposed by the cognition of individual participant and therefore the frame is heterogeneous (Nonaka, 1994).

Unique for each firm: Owing to the heterogeneity imposed by the tacit knowledge and also the inherent differences between firms, the bundle of explicit and tacit knowledge is unique to firms (Smith, 2001). This unique approach towards knowledge could explain the performance heterogeneity among firms in spite of using similar quality standards and technology (Anand et al., 2010; Sharma et al., 2016). The uniqueness and the inability to codify the tacit component limits the ability of firms to learn about knowledge phenomenon from each other or its peers (Haldin-Herrgard, 2000).

Strategic and Complex: The strategic nature of knowledge assets is evoked because of the interdependent nature, its reliance on past events and its influence on future performance (Leiblein et al., 2018; Teece, 2000). Complexity is derived from novelty and multidimensionality of knowledge assets (Tatikonda & Rosenthal, 2000). For example, knowledge assets can be assessed on dimensions of cost, quality, mobility and failure risks (Nonaka, 1994). Assessing these dimensions needs specialized knowledge that is situated in different functions (Teece, 2000). Owing to this firms evolve social and technical tools across functions to maintain and exploit the knowledge assets. These social and technical tools lend knowledge its value within the firm. But, outside this social and technical system, the knowledge may not be as valuable, thus suggesting some level of immobility of knowledge assets (Trist, 1981).

Individual and organizational level of existence: Knowledge can reside within individuals, groups or exist at the firm level. So, while expertise may be an individual level knowledge asset, social processes at a group or firm level can also confer expertise (Trist, 1981). Firm culture is an example of a firm level knowledge resource that can motivate individual behavior (Harris, 1994). Team norms like groupthink, where the desire for conformity leads to dysfunctional decision making are a team or group level knowledge asset (Janis, 1971). Given this multi-level of existence, studies of knowledge phenomenon must also ideally be studied at both individual and group levels (Carter et al., 2015).

Challenging to transfer: For all the reasons mentioned above, work instructions and standard operating procedures, which represent explicated knowledge, are easier to transfer than tacit knowledge. When the asset that is transferred has higher tacit components, it may not yield efficient results (Mudambi & Tallman, 2010). The failure of Dell's call center in India and its subsequent relocation to the US can be attributed to the inability of the agents in India to internalize the tacit knowledge (Metters, 2008). This suggests that Dell was unable to create an effective knowledge transfer between itself and the Indian service provider.

An additional feature of knowledge assets that has not been explored in OSCM literature is the ability of knowledge to generate rents within the firm. Specifically, heterogeneous distribution of knowledge within firms, bestows rent generating power on the unit that has control over knowledge assets (Mudambi & Navarra, 2015). Thus, to ensure continuity of rents, units or functions may constrain intra-firm sharing of knowledge (Goh, 2002).

Outsourcing In OSCM

Research in the OSCM field has predominantly used TCE and RBT for examining outsourcing (Tsay et al., 2018). Researchers take a firm level of analysis and suggest that the ‘firm’ considers the TCE variables like asset specificity and / or RBT variables like core competency to make the decision of whether to outsource (McIvor, 2009). This construct has been used in various settings like outsourcing of professional services, outsourcing of remanufactured products, outsourcing of supply management and outsourcing of maintenance services (Brewer et al., 2013; Ellram et al., 2008; Maltz & Ellram, 1999; Martin, Guide, & Craighead, 2010). The OSCM field seems to believe that both TCE and RBT are valid theories. But, as we have explained earlier, other fields are critical about TCE and RBT in the theory’s ability to explain outsourcing (Poppo & Zenger, 1998).

A keen look at OSCM literature reveals that even within the field we have non-uniform applications and results with these theories. For example, while TCE suggests that firms must not outsource high frequency transactions (Williamson, 2008), Ellram et al. (2008) find the opposite. While RBT asserts that firms must not outsource core assets (Barney, 2012), Jiang, Belohlav, and Young (2007) show that firm performance benefits are associated with outsourcing of core rather than non-core products. It is probably these inconsistencies that tempted researchers to combine TCE and RBT to explain outsourcing (Holcomb & Hitt, 2007). However, even after combining both theories, researchers still find a discrepancy between theoretical predictions and firm behavior (McIvor, 2009). These results suggest that TCE and RBT applied as firm level theories may not be as robust.

The ontological assumption of this stream of OSCM research seems to be that of the existence of a firm that can analyze and make decisions. Here, the firm essentially represents top management and the assumption asserts that top management analytically plans for and make all the strategic decisions for the firm based on known long term goals (Hendry, 2000). This assumption is not supported in the strategic management field on multiple counts. First, the top management decision to outsource may not be analytically planned but could be emergent based on some underlying conditions (Mintzberg & Waters, 1985). Second, some event or institutional pressure could make outsourcing or not outsourcing temporarily salient and drive decision making (Cyert & March, 1963; DiMaggio & Powell, 1983). So, the decision could be driven by temporarily salient variables rather than some long term goals. Third, the decision could be driven by middle management and not the top management. Middle management idiosyncrasies and bounded rationality could steer the decision away from firm level variables (Guth & MacMillan, 1986). Thus, the assumption of a firm level decision paradigm seems to be suspect.

Recent² outsourcing research in fact has reference to all these deviations. So, Mello, Stank, and Esper (2008) hint that knowledge of available service providers could be the first step in outsourcing decision making. This suggests that outsourcing can initiate not from an internal need but from the knowledge of service provider availability. Similarly, there are suggestions that outsourcing could be the outcome of a similar decision by other industries (John, Cannon, & Poudier, 2001). And, research has also

² We arbitrarily define research post year 2000 as recent. Since outsourcing research has at least an 80 year record if we start with Coase's 1937 article, this definition accounts for the fourth quartile of the research period and is thus reasonable.

confirmed the role of functional managers in outsourcing decisions (Bidwell, 2012). Managers interact in a social setting, they debate and, in a way, compete to have their individual solutions implemented as firm decisions (Kaplan, 2008). However, the dominant research stream has ignored these hints and continued the standard simplistic firm level of analysis. The deviations from theoretical prescription could be because of this improper ontological choice.

The research described above takes a firm level analysis and uses the firm as a metaphor for the top management. A second research stream uses the individual level of analysis and uses the individual as a metaphor for the firm. This stream implicitly assumes that the individual decision maker can have her solution implemented as the firm decision. For instance, Mantel et al. (2006) use an experiment to show core competency and strategic vulnerability, which is analogous to asset specificity, are you used by individual managers to make outsourcing decisions. Similarly, Marshall et al. (2015) show that managers drive outsourcing with their individual non-economic objectives. Since strategic decision formulation is a negotiated process, these individual based studies' are essentially studies of how individual managers frame solutions rather than how firms make outsourcing decisions (Kaplan, 2008).

In summary, while outsourcing is a strategic decision, both the firm level and the individual level research adopt assumptions that are not suitable for strategic decision making. All strategic decisions are not taken by top management alone. Also, while strategic decisions start as individual solutions, individual managers rarely can force their solutions on other decision makers. Both these streams ignore the fact the strategy making is a social process that involves multiple decision makers at different levels of

hierarchy within the firm (Jarzabkowski & Wilson, 2006). We can better understand the idea of strategy as a social process by reviewing the literature on strategy making, which we do in the next section.

Strategic decision making

Strategy research has predominantly defined strategy by its content. Porter's generic strategies (1980), Miles and Snow's adaptation based framework (1978) and Fisher's product characteristic supporting supply chain strategies (1997) are all examples of content based strategy research. A complimentary view has been to study strategy as a process and answering the question of how strategic decisions are made (Eisenhardt & Zbaracki, 1992). This research stream has found increasing acceptance among researchers since firm performance is associated with not just the content of strategy but also with the process of strategic content generation (Dean Jr & Sharfman, 1996). In spite of the importance, research on strategy as a process lags the research on strategy as content in the operations and supply chain management area (Boyer, Swink, & Rosenzweig, 2005).

While we can probably never be sure if the strategy making process in firms has changed over time, the academic paradigm of studying the strategy process has changed substantially. Overall the paradigm has changed from the assumption of an omnipotent and omniscient strategist to that of a more frail, boundedly rational and biased individual (Kaplan, 2008; Mintzberg, 1990). The literature supporting strategy has also evolved from economics to cognitive psychology to sociology (Jarzabkowski, Lê, & Balogun, 2018; Powell et al., 2011). We review this change in this section.

Early research in strategy making

The early process strategy research defines strategy as a plan of action and attributes the role of strategy making to the top management (Mintzberg, 1990). It also assumes that in the long term, the interests of the top management are the same as the interests of the firm (Jensen & Meckling, 1976). Because of this attribution, this stream merged the idea of top management and firm. So, the top management or the firm is expected to know about all possible variables that affect or are affected by the decision. The strategic decision is thus considered to be the outcome of rational considerations of all these variables (Schwenk, 1988).

Researchers identified the bounded rationality of strategists and supported them by designing tools and frameworks to help them achieve rationality (Gavetti & Levinthal, 2004). This early research uses majorly uses empirical surveys for research (e.g. Dean Jr & Sharfman, 1993). This stream is based on economic theories and like other economic theories, this research is able to predict aggregate level phenomenon but is not able to predict the decisions of individual firms (Cyert & March, 1963).

Behavioral theory based strategy research

Moving away from the purely economic and unitary model of early research, the behavioral theory of the firm asserts that the decision process involved multiple coalitions and that these coalitions could have different objectives (Cyert & March, 1963). And, decisions are linked to aspirations of the firm and not to economic performance alone. This belief led to the idea that the strategy process could be about an emergent phenomenon based on idiosyncratic interaction between individuals (Mintzberg &

Waters, 1985). While early research bestows agency on the managers, this stream highlights the role of environment in driving strategy (Hannan & Freeman, 1977). This stream also recognizes the role of middle management in the strategy process (Guth & MacMillan, 1986). The stream claims that the different objectives of middle management are likely to influence the specific strategy that is adopted (Raes et al., 2011). Typically, the researchers of this stream use case studies to explore the emergence of strategic decisions over time (e.g. Mintzberg, Raisinghani, & Theoret, 1976).

The recognition that firms can have multiple coalitions led to the idea that decision making might not be about rationality, but rather about politics. One set of researchers identified politics as the ability to manage decision makers with different objectives and mindsets (Sapolsky, 1972). Political skill was thus viewed to be desirable (Smith et al., 2009). However, later researchers painted a negative image of politics and associated politics with the guile (Eisenhardt & Bourgeois III, 1988). Their research suggested that the involvement of politics leads to poor strategic decisions (Stanczyk et al., 2015). The research on politics thus suggests that the usage of this term could have different and possibly equivocal connotations.

Cognitive theory based strategy research

The behavioral theory of the firm moved the strategy research away from economic theories. To drive the conversation back to economics, (behavioral) economists invoked the cognitive theories which blame the theoretical limitations on the strategists' cognition (Powell et al., 2011). For example, decision makers are said to have different levels of loss aversion which makes them view the risks associated with a strategic task

differently (Kahneman, 2011). And, cognitive myopia makes strategists deviate from the long term economic optimum (Jensen & Meckling, 1976).

Thus, cognition is projected as a filter through which strategists observed the world. Cognition could be driven by social cognition (Porac, Thomas, & Baden-Fuller, 1989), attention (Ocasio, 1997), personal attributes of top management (Hambrick & Mason, 1984) and emotions (Nickerson & Zenger, 2008). The cognitive stream claimed that decision making could be driven towards economic optimality by managing this filter. In this stream, the agency is again bestowed back on the decision maker, albeit with cognitive limitations (Levinthal, 2011). Also, this field also implies that strategic decisions can be taken by one person (Nadkarni & Chen, 2014). The behavioral field predominantly uses laboratory experiments and simulations to understand the association between cognition and decision making (e.g. Cohen, March, & Olsen, 1972; Kahneman, 2011).

The cognitive theories focused on the decision maker and explored cognitive contingencies that influenced the degree of rationality and politics (Shepherd & Rudd, 2014). So, CEO and top management team member characteristics like tenure, education and risk taking ability have been shown to influence decision making process adoption (Papadakis, Lioukas, & Chambers, 1998; Stumpf & Dunbar, 1991). Additionally, firm attributes like organization structure have also known to affect the decision making process (Wally, 2003). As an example, centralized firms are expected to have less politicking than decentralized firms (Eisenhardt & Bourgeois III, 1988). A more nascent stream of literature ascribes the team level antecedents for process choice. For instance, researchers have cited team cognitive heterogeneity to either support or hamper

comprehensive decision making (Ancona & Caldwell, 1992). Thus, cognitive theories cite multiple firm, team and individual level factors that can drive cognition and influence the level of rationality and politics in the decision process.

Social theory based strategy research

Building on behavioral research, the strategy-as-practice (SAP) literature accepts that strategists have cognitive limitations. This field claims that that strategy making is a social process among cognitive strategists (Jarzabkowski & Wilson, 2006). So, strategy making involves cognitive strategists forming their own solution about a strategic problem and then trying to influence other strategists to impose their solution as the firm decision. Kaplan (2008) has labeled this behavior as a *framing contest*, and pictures strategic decision making as a contest between competing solutions.

Researchers in SAP have a broader focus on three aspects that are attributed to have a strategic agency – the cognitive strategist, the strategy tools and the firm norms (Hendry, 2000). For example, in an interesting research Kaplan (2011) attributed strategy making to the way in which PowerPoint is used in organizations. Jarzabkowski (2008) showed how strategists' in three universities simultaneously create firm norms and are bounded by firm norms in strategy making. Kaplan (2008) shows the role of interactions between managers in the strategic decision to enter new markets. SAP researchers use the case study method and take a naturalistic paradigm of study. That is, they attempt to observe and describe the strategy process in the natural settings and based on the perception of the strategist.

This field of research claims that rationality is driven by the tools that are used by strategists (Hendry, 2000). For example, the strategists use the BCG matrix for strategic decision making. And, it is these tools and not the strategist that embodies rationality in decision making (Cabantous & Gond, 2011). So, SAP moves the focus of rationality away from the strategist. On politics, SAP does not offer an explicit position. However, the field suggests that cognitively different individuals try to influence each other and this act of influencing is congruent to the definition of politics (Kaplan, 2008). SAP does not associate a positive or a negative value to this influence activity but asserts that it is part of all strategy processes.

As we had stated at the beginning of this section, we cannot be sure if the strategy process within firms has changed. But, the lens to study strategy has had substantial change – right from the ontology assumptions, the variables observed to the method used. A progressive theme is that the level of analysis is getting more micro – from firm level of early research, coalitions in the behavioral theory to that of individuals in SAP. In spite of this progress, there are still claims that we do not know enough about how strategy is made and there are calls for more research (Jarzabkowski, 2008; Kaplan, 2008).

Outsourcing decision making

We review the research in OSCM and KAO in light of the strategy research described in the above section.

OSCM literature on strategy

Skinner (1969) is probably among the earlier researchers to discuss operations strategy. He talks about the inclusion of manufacturing in the firm strategy discussion and

suggests 15 sequential steps to make the manufacturing strategy decision. This research assumes that information on the competitive situation, economics, technology, etc. is clearly known. There is an implicit assumption of the manufacturing manager who would collect, process and analyze this information to make the manufacturing strategy. Because of the assumptions of complete knowledge and unitary actor, this stream of research is similar to the early research school.

Boyer et al. (2005) review the research on strategy published in the POMS Journal and most strategy research still seems to confirm to the early research school. So, Anand and Ward (2004)³ advise firms to analyze the environment and then decide on the approach to flexibility. Here they clearly assume that (1) Firm is a unitary actor that can analyze the environment and (2) firm can decide on the approach to flexibility. Ignoring the idea that human actors have a very poor ability to judge the environment (Starbuck & Mezas, 1996), this research ignores the fact that environmental analysis can be done simultaneously by multiple members within the same organization (Yasai-Ardekani & Nystrom, 1996). Also, strategic decisions like that of flexible systems are rarely taken by one person and involve multiple decision makers in the organization (Adler, 1995). Most strategy papers in OSCM follow this pattern of unitary actor.

There are a few exceptions. Sting and Loch (2016) claim that strategy making is the task of top management, but the suggestions about changes can come from middle management. Kirchoff, Omar, and Fugate (2016) discuss the struggles a manager can have in implementing sustainability strategies in firms. To clarify, in OSCM we know that there is a difference of perception on strategic topics within the firm, we know that

³ We choose this paper as an exemplar of the papers reviewed by Boyer et al. (2005).

this difference could negatively impact firm performance but we have rarely embarked to a detailed investigation to understand and explore this (Boyer & McDermott, 1999).

There are numerous calls to break out of this mold. So, Boyer et al. (2005) suggest that the (lack of) goal alignment between functions and its impact of strategy must be studied. Similarly, Rosenzweig and Easton (2010) have called on researchers to explore multiple views within the organization for strategy research. As we highlight below, OSCM has substantial research on the influence of cognition, but most of that research is in tactical topics like deciding the order quantity and not in strategy (e.g. Moritz, Hill, & Donohue, 2013).

Individual cognition and KAO solution

Since we have reviewed the features of knowledge assets and their association with outsourcing, it will be easier to appreciate how cognitive strategists build their individual solutions for KAO. The OSCM research on the KAO decision process seems to be its infancy. OSCM researchers commit themselves to either a firm or an individual level of analysis (Ellram et al., 2008; Mantel et al., 2006). Like the early strategy research, in taking the firm level of analysis, the researchers merge the interest of the individual manager and the firm suggesting that managers would always be firm interested. There is also a suggestion that the outsourcing process is rational and that it has a specific structure (Mello et al., 2008). Lastly, researchers have predominantly restricted themselves to the theoretical constructs of TCE and RBT (McIvor, 2009)

A recent and relevant change has been the acceptance of non-rational and political processes and goals in outsourcing decision making (Marshall et al., 2015). That is,

managers may support outsourcing based on their individual interests and they may not always be concerned with firm interest. Employees and firms have been shown to have different interests (Abdulsalam et al., 2018) and Pettigrew (1973) documents the decision to buy stock control and central information systems at the retailer Michaels to show the influence of such differentiated interest on decision making. This literature suggests that managerial interest and not firm level economic interest may drive KAO decision making.

Also, the collection of cases by Lacity and Hirschheim (1993) and some anecdotal evidence suggests that functional managers rarely support outsourcing within their functions (High, 2018). That is, managers closer to the knowledge asset who's outsourcing is being decided, tend to not support outsourcing. This could either be because the functional managers who are closer to the asset or the task being outsourced have an attachment for knowledge assets they control, the fear of loss of power bestowed by the outsourcing of knowledge asset, or even the prospective stress of managing the knowledge asset in the outsourced environment (Levina & Vaast, 2008; Mudambi & Navarra, 2015). Overall, this suggests that the subversion of KAO decision could be due to asset or task affinity.

This literature described above suggests a systematic subversion of the KAO decision based on self-interest or task affinity. However, recent literature has shown that such deviations can be more implicit (Kaplan, 2008). Some external context may influence the perception of selective external cues (Dearborn & Simon, 1958). Since knowledge assets are unique, and KAO decisions are non-routine, the biased perception

can have a greater effect on decision making (Loch, 2017). Thus, some implicit processes of sensemaking could make the decision manager more averse (likely) to KAO.

The research on sensemaking suggests that managers, because of retrospective and prospective antecedents, may perceive the same signals very differently. So, the same non-routine supply chain situation may seem an opportunity for one manager and a threat to another (Phadnis et al., 2017). The same innovation may be activated differently by managers (Tanskanen, Holmström, & Öhman, 2015). The performance of a buyer could be based on the similarity of cognitive frames between the buyer and the supplier (Carey, Lawson, & Krause, 2011). All these papers stress the role of cognition, which may not be uniform within the firm (or buy supplier dyad), and which may lead to completely different perceptions.

Function based antecedents: Cognition is known to be primarily driven by the role of the manager in the organization (Hodgkinson & Johnson, 1994). Because of their functional backgrounds managers are known to selectively perceive environmental cues (Dearborn & Simon, 1958). One set of researchers claim that the selective perception would only be activated for routine decisions and that in making novel or unique decisions, managers would resort to a more protracted cognitive effort (Walsh, 1988). The higher cognitive effort would lend a wider attention span to managers (Louis & Sutton, 1991). The second set of researchers, citing the crash of Air Florida flight 90 (Gersick & Hackman, 1990), show that functional decision makers fall back on existing routines even in novel situations. This suggests that even in novel situations selective perception would not play a role. Thus, extant research does not give us unequivocal

guidance if functional background will lead to selective perception in novel and unique KAO decisions.

OSCM researchers have also examined the impact of selective perception by operationalizing thought worlds. For example, members from different functions are known to have diverging views in seemingly objective tasks like calculation of the total cost of ownership (Niranjan et al., 2014). Other researchers have reported the impact of functionally driven biases on production planning and forecasting (Oliva & Watson, 2011), supply chain planning (Lambert, García-Dastugue, & Croxton, 2005), supplier relationship (Bakker & Kamann, 2007) and product and process development (Tatikonda & Montoya-Weiss, 2001). This suggests that the psychological distance or the affinity that the manager has with a task could influence the perception of that task.

Self-interest based antecedents: When facing a situation that harms self-interest managers may be instinctively driven towards self-preservation (Hendry, 2005). So, managerial cognition will support the self-preservation by the selective perception of relevant cues. This supports the idea of self-interested decision makers propounded by agency theory (Jensen & Meckling, 1976). However, this principle of self-interest has been contested by proponents of stewardship theory who claim that managers always employ the frame of firm interest (Davis et al., 1997). Also, researchers claim that social and not individual interest may sometimes drive decision making (Urda & Loch, 2013).

The success of strategy implementation is associated with the differences of interests across different hierarchical levels (Guth & MacMillan, 1986). Self-interest has been found to influence outsourcing decision making (Marshall et al., 2015). However, it

is not known if the influence of self-interest is a blatant systematic bias, or it operates through the process of selective perception.

The literature is clear that cognition does implicitly influence strategic decision making. Also, it is accepted that the affinity of the managers with the task and the impact of the decision on their self-interest are key antecedents to managerial cognition.

However, the nature of the influence of these antecedents is not clear. The self-interest and task affinity could have a direct and systematic influence on decision making. Having established the premise of Part I on individual managerial decisions, we review the decision processes in the next section.

Firm level KAO decision

Knowledge asset outsourcing is also a strategic process because of interdependency across agents, path dependence and temporal effect of the decision (Leiblein et al., 2018). However, two features differentiate KAO from all other strategic decisions. One, unlike other strategic decisions, KAO is accompanied by a substantial change of organizational structure and power relations within the firm (Bidwell, 2012). Hence KAO decisions are likely to see acrimonious participation from power interested decision makers (Lacity & Hirschheim, 1993). Second, the performance of the KAO decision depends on the long term maintenance of relationships with suppliers (Mello et al., 2008). Therefore, it is necessary that at least the executives likely to be involved with managing the relationship consider the decision to be legitimate. This makes it more important for KAO decisions to be considered legitimate (Neilsen & Rao, 1987). TMT are more likely to seek out participation and legitimacy in the KAO decision.

In spite of these differences with mainstream strategy literature, there has been sparse research on the KAO decision making process in the OSCM domain. Mello et al. (2008) offer a simple and sequential 5 step process. McIvor (2009) study 6 decisions in 3 firms and map a firm level process around TCE and RBT. The process is described with six steps – recognition, motivation, outsourcing, confidence-building and expansion / contraction. Marshall et al. (2015) study 9 outsourcing decisions and consider an individual manager level of analysis to suggest that managerial motivation to outsource influences the decision process. The non-linearity and the messiness of KAO decisions have not been researched.

Assuming a simple and linear process creates a serious gap between the theory and practice of KAO. Mainstream strategy literature, facing a similar gap, particularly in the knowledge economy, resorted to studying strategy as a practice (Jarzabkowski & Wilson, 2006). This stream views strategy making as a social process of interaction between decision makers (Vaara & Whittington, 2012). Decision makers are assumed to try and impose their individual solution as a firm level decision. In part II of this thesis, we explore the firm level decision making from this perspective.

CHAPTER 3

INDIVIDUAL SOLUTION OF KNOWLEDGE ASSET OUTSOURCING

बड़े वसूक से दुनिया फ़रेब देती रही, बड़े ख़लूस से हम ए तिबार करते रहे

Bade vasook se duniya fareb deti rahin, bade khulus se hum aitbaar karte rahain.

The world created a hoax with confidence, and I believed the hoax with sincerity.

Shaukat Vasti

Introduction

The decision to outsource knowledge assets is highly strategic and non-routine (Mudambi & Tallman, 2010). Managers do not have the support of prior learning or established procedures for decision making. Under these conditions, because of bounded rationality, managers, even though they have the best interest of the firm in mind, are likely to make inaccurate decisions (Simon, 1957). Accordingly, managers are expected to use transaction cost analysis (TCE) and resource-based theory (RBT), and the values that they ascribe to the decision variables (e.g. asset specificity and core competency) are expected to vary stochastically around a true value (Mantel et al., 2006). Firms are tolerant of these inaccuracies as they assign the task of offering solutions to multiple functional managers (Schoenherr & Swink, 2012). In doing this, firms implicitly assume that a simple aggregation of stochastic deviations by boundedly rational and firm-interested managers should lead them closer to the real value.

However, the literature on decision making has found deviance with the assumptions of bounded rationality as well as that of firm interest. So, managers directly associated with certain tasks are known to be biased towards specific interventions for

that task (Dearborn & Simon, 1958; Niranjana et al., 2014). And, this bias could either be a systematic attempt to subvert decisions to protect the status quo of that task or could also be an outcome of implicit bias (Moore & Loewenstein, 2004). Similarly, managers have been known to be self-interested, especially in conditions leading to self-preservation (Jensen & Meckling, 1976; Karni & Schmeidler, 1986). This self-interest could also systematically or implicitly influence decisions. This suggests that the implicit belief that managers stochastically chose values of TCE and RBT variables may not be valid. That is, the outsourcing decisions and the value of the variables used to make the decisions could be biased.

For instance, for the outsourcing of airline maintenance processes, top management team and maintenance technicians offer a radically opposite perspective (Cerullo & Fisher, 2018). Top management cite the expertise of outsourced maintenance suppliers while maintenance technicians cite the risk of oversight. Maintenance technicians are directly associated with the task being outsourced and also are likely to lose their jobs post outsourcing. Top management neither has the task association nor any disincentive from outsourcing. Thus, hinting at the role of task association and self-interest in KAO decision making.

The contraptions of systematic and implicit bias undermine the basic assumption of bounded rationality in theories like TCE and RBT that are used to explain outsourcing. Bounded rationality involves attention to a few randomly chosen cues (Simon, 1957). However, both systematic and implicit bias involve a non-random focus on some specific cues (Cyert & March, 1963). Here, systematic bias is a subversion of the decision, implicit bias is about some contextual variables imposing selective perception (Dearborn

& Simon, 1958). Also, systematic bias provides an explanation that is a substitute for TCE / RBT which would claim that managers make the outsourcing decision based on their association with the task and the prospective impact of outsourcing on their self-interest. Implicit bias suggests the validity of mechanisms suggested by TCE/ RBT and merely claims that the judgement of TCE / RBT variables is biased (Levinthal, 2011).

We run a vignette based experiment to test the influence of systematic bias against implicit bias on KAO decision making. We propose that the association of the decision maker to the knowledge asset being outsourced (TASK AFFINITY - TA) and the prospective impact of the decision on managerial self-interest (SELF-INTEREST IMPACT - SI) are likely to lead to heterogeneous propensity to outsource. We also propose that TA and SI are also likely to influence the operationalization of TCE and RBT decision variables. The operationalization is likely to partially mediate the link between TA / SI and the propensity to outsource.

Through this research, we directly contribute towards explaining the KAO solutions offered by individual managers. By examining the role of TA we address the debate on the role of functional bias on KAO decision making (Dearborn & Simon, 1958; Walsh, 1988). Further, SI allows us to redress the assumption of self-interest and stewardship in this area (Donaldson & Davis, 1991). These results motivate further research on amalgamation of the heterogeneous solutions for KAO offered by different managers. We believe that our results have validity in the larger stream of non-routine strategic supply chain decisions like selecting suppliers for novel capital assets and plant location decisions in new countries.

Hypothesis building

The first hypothesis is concerned with TA. We define TA as the level of direct association of the manager with the knowledge asset being considered for outsourcing. For instance, in the case where a pharmaceutical firm is considering outsourcing its clinical research processes, the manager of the existing clinical research procurement team would have a higher TA than the purchasing manager. Higher TA is analogous to the lower psychological distance as espoused by construal level theory (CLT) (Trope & Liberman, 2010).

KAO leads to a reduction in the number of employees in the function that the knowledge asset is associated with. For example, when Walmart recently outsourced its accounting and finance processes from its Charlotte, Oregon corporate office, they planned a reduction of about 600 employees (Geske, 2019). Also, outsourcing knowledge assets involves the additional complex task of balancing the performance of outsourcing services supplier and the demands of other internal customers (Levina & Vaast, 2008). The prospective layoffs and the additional complex tasks are likely to lead to higher stress and thus an averseness to recommending outsourcing. Conversely, a manager from outside the function associated with the knowledge asset is less likely to be exposed to this stress and has a higher propensity to recommend outsourcing. Thus:

H1a: Higher task affinity would lead to a lower propensity to recommend outsourcing of a knowledge asset

The next hypothesis is associated with SI. The reduction of employees and change of organization structure, post outsourcing, is likely to cause a substantial change of power distribution within the firm (Mudambi & Navarra, 2015). For instance, Randy

Mott insourced information systems (IS) processes at General Motors and is now regarded as among the most influential IS managers (High, 2018). So, while the KAO decision has firm level implications, it also has consequences for individual managers. The dominant logic of self-interested managers leads us to believe that the prospective influence of KAO decision on the manager is likely to influence the manager's propensity to recommend outsourcing (Jensen & Meckling, 1976). This effect is likely to be more pronounced in situations of self-preservation, where the manager is likely to face impairment of self-interest. Thoughtful of the harm on their self-interest, managers are likely to show a lower propensity to recommend outsourcing. This leads to:

H1b: Higher impairment of self-interest would lead to a lower propensity to recommend outsourcing of a knowledge asset

As described in the literature review, different functions, or managers with different levels of association with the task, represent disparate thought worlds (Niranjan et al., 2014). Based on retrospective causes the thought worlds are likely to generate completely different cognitions for the phenomenon (Daft & Weick, 1984). For knowledge assets, with explicit and tacit components, a direct association would lead to a detailed awareness of the task – especially since immersion and experience lead to higher awareness for the tacit components (Reber, 1989). So, functional managers directly associated with the knowledge asset considered to be outsourced would have a greater awareness about the idiosyncrasies and complexities of that asset. The awareness of complexities would make them attribute more importance to that knowledge asset and perceive the asset to be a core-competency. They are also likely to be able to visualize more opportunities for suppliers to act opportunistically were this asset to be outsourced.

H2a/b: Higher task affinity would lead to the perception of (a) higher asset specificity and (b) higher core competence attribution

While TA presents a retrospective reason for cognition, SI offers a prospective motive to generate different cognitions. Based on prospective impact, especially driven by self-preservation, individuals tend to automatically generate self-fulfilling perceptions (Moore & Loewenstein, 2004). These perceptions tend to be in the direction that supports the self-preservation of the decision maker. Hence, managers who face a loss of self-interest because of the decision are likely to perceive a higher asset specificity and higher core competence attribution than managers who do not face this loss.

H2c/d: Higher impairment of self-interest would lead to the perception of (c) higher asset specificity and (d) higher core competence attribution

It should be noted that in H2 (a/b/c/d) task affinity and self-interest impairment induces selective perception (Dearborn & Simon, 1958) – that is, the context induces the managers to focus only on selected cues. Task affinity and self-interest impairment would implicitly lead the managers towards biased perception of asset specificity and core competence attribution.

We next discuss the role of perceptions of asset specificity and core competency on the propensity to recommend outsourcing of knowledge assets. TCE has mentioned the role of asset specificity, while RBT has highlighted the role of core competence (Barney, 1996; Williamson, 1981). While there is considerable debate on the influence of firm level constructs of asset specificity and core competency on the decision to outsource, it is accepted that individual managers do indeed refer to these variables when making the outsourcing decision for physical products (Mantel et al., 2006). However, in knowledge products, the role of asset specificity is unclear (Ellram et al., 2008). Also, the

outsourcing of R&D literature suggests that firms may in fact not be averse to outsourcing core competencies (Quinn & Hilmer, 1994). In the next hypothesis, we attempt to confirm this accepted belief among OSCM researchers for knowledge assets.

H3a/b: Higher perception of (a) asset specificity and (b) core competence attribution leads to a higher propensity to recommend the outsourcing of a knowledge asset.

In the first set of hypotheses (H1 a/b), we highlighted a thoughtful process by which makes the managers alter their propensity to recommend the outsourcing of knowledge assets. By combining the next 2 sets of hypotheses (H2a/b/c/d and H3a/b), we now offer an implicit cognitive process that influences the propensity to outsource. We have hypothesized that TA and SI influence the perception of asset specificity and core competency. This perception of asset specificity and core competency then drives the propensity to recommend outsourcing. We combine the two hypotheses to claim a mediator role for the perception of asset specificity and core competency. We suggest that the effects of TA and SI on the propensity to recommend outsourcing is mediated by the perception of asset specificity and core competency

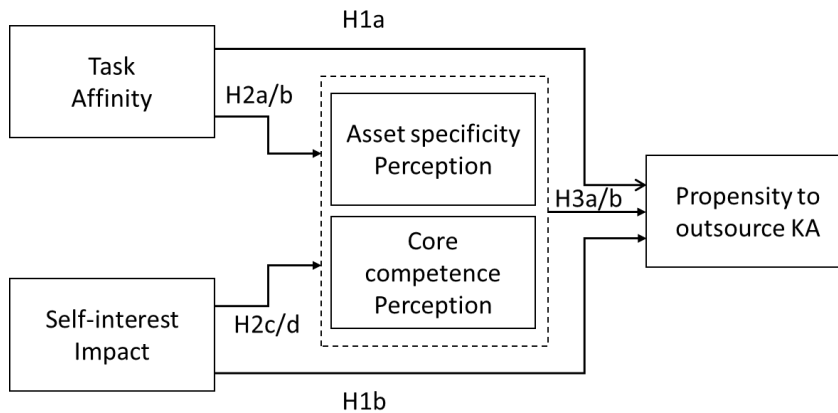
H4 a/b: The perception of (a) asset specificity and (b) core competency mediate the effect of task affinity on the propensity to outsource

H4 c/d: The perception of (c) asset specificity and (d) core competency mediate the effect of self-interest impact on the propensity to outsource

The hypotheses have been shown in *Figure 1 Conceptual Model* . We would like to emphasize that the direct and mediated paths represent two completely different processes of decision making. The direct path (H1 a / b) represents a thoughtful approach – where managers systematically alter their propensity to outsource knowledge assets based on TA and SI. The mediated path (H4 a/b/c/d) represents an implicit cognitive

process where TA and SI alter the cognition of the managers and this altered cognition leads them to their recommendations.

Figure 1 Conceptual Model



Methodology

Vignettes have emerged as a standard method to answer questions on behavior and cognition in OSCM research (Rungtusanatham, Wallin, & Eckerd, 2011). The vignettes avoid the messiness of real life and help to arrive at causal linkages. Different kinds of vignettes have been used in OSCM research to theorize the influence of power on innovation (Chen et al., 2016), learning about risks (Hora & Klassen, 2013), attributing blame for unsustainable behavior (Hartmann & Moeller, 2014), attributing blame for disruptions (Polyviou et al., 2018), supplier selection (Kull, Oke, & Dooley, 2014) and even for outsourcing decisions (Chae et al., 2019; Mantel et al., 2006). Notwithstanding the popularity of vignette-based research, this form of research needs conscious design interventions to help ensure that any change in the dependent variable is only due to the changes in the independent variable.

Context selection

Vignette based experiments have an advantage of controlling for all other conditions but the desired intervention (Alexander & Becker, 1978). However, if the context of the vignette is similar to an event that has occurred in the participant's organization, they are likely to be retrospectively biased by organizational antecedents and outcomes (Finch, 1987). It is thus necessary to select a context that the respondents are actively aware of but have not experienced. Based on our discussion with industry experts in knowledge asset outsourcing, we select the specific context of procurement process outsourcing. Less than 10% of industries had outsourced some part of their purchasing process and the least (1%) uptake has been in the chemical industry (Nougès et al., 2019). Hence, we weave the context around the procurement process outsourcing in the chemical industry. Also, prior awareness of procurement process outsourcing and no previous direct experience of procurement process outsourcing are used as base conditions to qualify participants.

Vignette design

It is necessary that the vignette must resemble a realistic decision making situation that the participants are likely to encounter in their organizations (Finch, 1987). To ensure this, we (1) discussed with multiple industry experts in procurement process outsourcing, (2) referred to white papers and industry position papers on procurement process outsourcing, (3) asked for feedback on the vignette from 4 research professors who are experts in purchasing research and have conducted vignette based research, and (4) discussed the vignette with clinical professors at a leading University reputed for

research in purchasing and supply management. We also ask the participants if they feel that the vignette represents a realistic scenario that they were likely to experience in their organization.

Another key requirement from a vignette is that it must elicit a realistic response. This may become problematic in socially desirable situations (Podsakoff et al., 2003). In our case, participants may be unwilling to present themselves as systematically biased. To avoid this, we use the indirect projective method (Fisher, 1993). Here, the participants are presented a scenario and asked to predict the actions of another person. Through this mechanism, the participants are known to reveal their own unconscious biases and attitudes (Sherwood, 1981). This method is fairly popular in the operations and supply chain management area and has been used to elicit responses on areas like customer reaction to supply chain unsustainable behavior (Hartmann & Moeller, 2014), the influence of time pressure on supplier relationships (Thomas et al., 2014) and impact of negotiation strategy on supplier relations (Thomas et al., 2018).

Experiment constants, variables, and controls

All the participants were asked to comment on the decision of Ramesh⁴, who is the purchasing / finance heads at Purichem, a medium sized manufacturer of specialty chemicals based in India. They were informed about (a) the extant competitive pressure to reduce cost, (b) possibility to outsource purchasing processes, (c) specific nature of outsourcing, (d) generic benefits and disadvantages of outsourcing the purchasing

⁴ Ramesh is the most common first name in India: <https://medium.com/@nimish/what-is-the-most-common-first-and-last-name-in-india-5776a1118e88>

process, (e) organization structure in the purchasing department, and (f) description of the outsourcing services supplier. All these factors were discussed with professionals from the specialty chemicals industry to ensure realism and relevance.

We manipulate TA among managerial respondents by selecting purchasing and finance professionals as participants for this study. The selection of purchasing professionals was based on the fact that they would have high TA with the decision to outsource purchasing processes. Our selection of finance as the low TA function was driven by Thorstein Veblen's (2017) work in the early 1900s where he suggests that the finance driven business owners have very different interests. This was supported by our discussions with purchasing managers who suggested that they had most conflicts with finance and accounting functions. Based on these two arguments we believe that finance managers would have low TA to the decision to outsource the purchasing process. For students, we segregate purchasing and finance based on the course credits in the specific discipline. Since TA is introduced as a natural, field based variable and not primed by the vignette, it leads to higher accuracy for this treatment.

The vignette has distinct prompts to introduce the variation in self-interest. We introduce the impairment of self-interest by mentioning that the manager faces a definite reduction in the job scope and uncertainty regarding employment post outsourcing. In the neutral situation, we mention the constancy of job scope post outsourcing and also assure the participants on job security. We compare self-interest impairment with a neutral condition and not self-interest enhancement condition since when comparing an impairment situation with enhancement situation we can never know if the effect stems

from an impairment, enhancement or joint effect of both frames (Crede, 2018). The vignettes are presented in Appendix 1.

We control for the self and other interest dispositions of our participants. It could be that participants who are inherently more self-interested could resort more strongly to self-interest impairment treatment. Also, other-interested participants are more likely to want to avoid loss of jobs for others⁵ (Meglino & Korsgaard, 2004). We measure self and other-interest using the scales developed by Gerbasi and Prentice (2013).

Immediately after describing the vignette, we ask the participants for their propensity to recommend outsourcing of purchasing processes on a seven point Likert scale that varies between “Never” and “Always”. For knowledge assets, the physical and site specificity does not matter and hence we restrict ourselves to measuring procedural and human asset specificity (Zaheer & Venkatraman, 1995). Since we do not have a reliable scale to measure the perception of core-competence, we develop a scale based on past literature (Gilliam & Voss, 2013)

Participants

We ran the experiment with two groups of participants. The first group (G1) consists of students from a leading business school in India. Students with a major in operations management are expected to have the mindset of operations and purchasing managers, while students with finance major are expected to mirror the mindset of finance and accounting managers. We wish to note here that it is an acceptable practice to use targeted students as participants for vignette based research and students and working

⁵ Head-count reduction is mentioned in the vignette as a benefit of purchasing process outsourcing.

professionals have shown similar results (Croson & Donohue, 2006). However, in our case, we do realize that the actual live experience of working in the purchasing or finance function could lead to the functional thought world. Hence, we repeat the experiment with the second group (G2) consisting of experienced purchasing and finance professionals. We select managerial students from the executive student pool of the same business school. The managerial participants have at least 10 years of work experience in purchasing or finance. Literature calls for a sample size of between 20 – 50 participants per treatment. Also, the power analysis based sample size calculations indicate a similar number. We adhere to that sample size for both our groups.

Experimental procedure

The purchasing and the finance function participants were randomly assigned to the neutral and self-interest groups. The participants were kept anonymous and they completed the reading of the vignette and answering the survey questions online without direct interaction with the experimenter. The participants were purposefully kept unaware of other participants in the experiment. Also, the vignette avoids mention and does not allude to the specific objective of outsourcing (reduce cost, improve service, etc.). These interventions serve to avoid the hierarchical impact of the experimenter's authority (Milgram, 1963), mitigates the problem of socially desirable responses (Fisher, 1993) and prevents the participants from responding based on the assumed objective of the experiment (Lonati et al., 2018). All the steps taken to ensure the validity of the experiment have been listed in *Table 1*.

The participants were sent an email to request participation by an instructor from the business school. It was mentioned that participation is voluntary and anonymous and that (non) participation would have no impact on their grades or job performance assessment.

Table 1 Experimental Validity

Source of disturbance to validity	Experimental procedure to mitigate influence
True causality	The self-interest impairment treatment is compared against a neutral treatment (and not a positive treatment)
Lack of realism	Feedback on vignette is obtained from industry experts, experts in purchasing outsourcing, research professors and clinical faculty. The feedback from professionals in specialty chemicals industry is used for the specific information presented in the vignette.
Priming inefficiency	TA is constructed from the natural, field disposition of the participants and hence not subject to priming inefficiency. For SI, we control for the self-interest disposition of the participants.
Influence of experimenter's authority	The participants do not meet the experimenter directly, participation is voluntary, and responses are kept anonymous
Socially desirable responses	Participants are kept unaware of the other participants in the experiment
Pre-empting experiment objective	Objectives of outsourcing are not explicitly mentioned in the vignette and participants are exposed to only one treatment.
Unrealistic responses	Appealing to self – actualization needs and monitoring the time taken for completing the experiment

Participants who agree to volunteer were assessed for eligibility based on two criteria, (1) awareness of purchasing process outsourcing and (2) no previous direct involvement in purchasing process outsourcing. If eligible, they were self-segregated into purchasing or finance function and then are randomly assigned the neural or the self-interest situation. Half of the participants were asked about their propensity to

recommend outsourcing (Likert scale 1 to 5) and then asked to respond to scales on asset specificity and core competency. The other half were first requested to respond to scales on asset specificity and core competency and then directed towards the question on the propensity to outsource. We randomized this to ensure that the asset specificity and core competence attributions are not post-hoc validation of the recommendation to outsource. Finally, all participants were asked to fill in the scales on self-interest and other-interest. In the end, they responded if they found the scenario realistic. The experiment was run on the Qualtrics platform.

Sampling

The student participants are part of the two year graduate program (MBA equivalent) from a leading business school in central India. These students have either graduated in 2020 (n = 655) or in 2019 (n = 680). They were asked to volunteer to participate if they can identify themselves as either from supply chain or finance concentrations. We asked questions about the number of courses taken to verify this. Out of 255 participants that volunteered, 32 responses were incomplete, 57 could not be specifically identified with either supply chain or finance concentrations and 38 respondents took less than five minutes. The incomplete, unidentified and quick responses were removed for a final sample size of 128 participants with 72 from supply chain management and 56 from finance. All the data was collected in the last two weeks of March 2020.

The managerial participants included participants of executive programs at the same business school. The participants have a minimum of 7 year work experience and

represent a diverse group of companies. These participants were also asked to self-select as supply chain or finance and we had included questions in the survey to verify this. A total of 1679 respondents were sent the request to volunteer out of which we received 304 responses. Out of these, 44 were incomplete, 50 could not be identified to their supply chain or finance and 47 took less than 5 minutes on Qualtrics. Thus, we had 163 valid responses with 138 from supply chain management and 78 from finance.

Incentive

Typically, incentives serve two purposes in experiments: (1) generate participation, and (2) generate cognitive effort. In our experiment, we use a lottery based monetary incentive to generate participation among student participants, and psychological incentives to generate cognitive effort among students as well as to generate participation and cognitive effort among managers. We do this based on a careful application of literature and with an aim to not bias the responses.

Monetary incentives are known to enhance participation. Since our student population was constrained, we resorted to a lottery to incentivize a higher response rate (Charness, Gneezy, & Halladay, 2016; Laguilles, Williams, & Saunders, 2011). A random set of 4 students were awarded a sum of Rs. 2000 each (about \$100 in terms of purchasing power parity based on OECD data). Since this lottery amount is substantially lower than the salaries of managerial participants, it could crowd out the intrinsic motivation to participate for managerial participants (Deci, 1975). To generate the cognitive effort and elicit the realistic response we appeal to the participants' self-actualization need by eliciting their support for the cause of theory development

(Bénabou & Tirole, 2006). We would like to point out that psychological interventions can have a strong impact on eliciting accurate responses, and monetary incentives are also not guaranteed to extract accurate responses (Read, 2005). The assignment into the self-interest and neutral groups is done randomly by Qualtrics. The final sample size is specified in *Table 2* and *Table 3*

Table 2 Distribution for student sample

	Self-interest	Neutral
Supply chain (high TA)	35	37
Finance (low TA)	28	28

Table 3 Distribution for corporate sample

	Self-interest	Neutral
Supply chain (high TA)	56	42
Finance (low TA)	28	28

Sample size determination

Multiple methods to calculate the minimum sample sizes on the basis of fit indices have been designed for SEM and CFA based models (e.g. Kim, 2005; MacCallum, Browne, & Cai, 2006). Based on the fit index used, level of significance and power, these methods derive a noncentrality parameter with a χ^2 distribution and the fit index itself serves as the effect size. The sample size reflects the ability to effectively generate the given fit index for the given noncentrality parameter. A key advantage of these methods is that they do not depend on accurate estimation of parameters to determine the sample size.

Using the methods highlighted the recommended minimum sample sizes for the various fit indices are:

Data: $df = 28$, $\alpha = 0.05$, $1 - \beta = 0.80$

1. RMSEA: 144 [$RMSEA_{NULL} = 0.05$, $RMSEA_{ALT} = 0.10$] (MacCallum, Browne, & Sugawara, 1996)
2. GFI: 132 [$GFI_{NULL} = 0.95$, $GFI_{ALT} = 0.90$, $p = 11$] (MacCallum et al., 1996)
3. Steiger's γ : 84 [$\gamma = 0.95$, $p = 11$] (Kim, 2005)

As we can note from above, our sample size is larger than what is indicated by these fit index based power analysis⁶.

Descriptive statistics

The participants are not significantly different by their age, gender or duration of the time they spend on the experiment for both the self-interest or function based groups. While the difference in age of the functional group among students is statistically significant, the mean values are similar and hence we ignore the difference. The means of the two groups and the p value of their difference is mentioned in *Table 4* and *Table 5*. 'Mean 1' in the self-interest group represents the self-interest hurt group and 'Mean 2' represents self-interest neutral group. In the functional group, 'Mean 1' represents purchasing (high TA) and 'Mean 2' represents finance (low TA).

The experiment is conducted over Qualtrics and the duration measures the time for which the browser is open. It is likely that keeping the browser open for longer

⁶ Code for the power analysis taken from: <https://timo.gnambs.at/research/power-for-sem>

periods could systematically influence the participants' response. Hence, we test for the slow and the fast responding participants and test for the influence on proka. We define participants with less than median times as slow, and those with more than median times as fast. We do not observe a significant difference between the two groups (Student: $\overline{proka}_{slow} = 4.16$, $\overline{proka}_{fast} = 4.34$, $p = 0.618$; Managerial: $\overline{proka}_{slow} = 4.58$, $\overline{proka}_{fast} = 4.51$, $p = 0.827$).

Table 4 Descriptive data for student participants

		SI	TA
Age	Mean1	24.095	24.431
	Mean2	24.016	23.564
	p Value	0.789	0.005
Gender*	Mean1	1.283	1.275
	Mean2	1.286	1.296
	p Value	0.977	0.801
Duration**	Mean1	5899.952	4465.403
	Mean2	6797.154	8785.768
	p Value	0.821	0.289

*1: Male 2:Female, **in seconds

Table 5 Descriptive data for managerial participants

		SI	TA
Age	Mean1	36.179	36.093
	Mean2	37.594	38.071
	p Value	0.27	0.133
Gender*	Mean1	1.096	1.122
	Mean2	1.157	1.127
	p Value	0.268	0.932
Duration**	Mean1	19144.583	26272.908
	Mean2	21326.843	9397.839
	p Value	0.861	0.142

*1: Male 2:Female, **in seconds

Since the vignette manipulates for self-interest, we also test for the difference of inherent self-interest among participants of purchasing and finance groups. We use the scale developed by Gerbasi and Prentice (2013) to measure self and other-interest disposition. The scale has 8 items for each, self and other interest. Since the responses for these scales deviates from multivariate normality for student as well as managerial respondents, we use the non-parametric versions of MANOVA (Ellis et al., 2017). The results of the normality check and permutations based ANOVA are shown in

Table 6 and Table 7. Since the distribution of age, gender, duration of time taken for the experiment, inherent self-interest disposition and inherent other-interest disposition are similar across groups, that is they are randomly distributed, we do not control for them in the main analysis (Cresswell et al., 2009).

Table 6 Normality test of self-interest and other-interest across student and managerial respondents

	Self-Interest Student		Other-Interest Student		Self-Interest Managerial		Other-Interest Managerial	
	Mardia Statistic	p	Mardia Statistic	p	Mardia Statistic	p	Mardia Statistic	p
Skewness	546.182	0	431.261	0	546.182	0	929.178	0
Kurtosis	13.586	0	11.971	0	13.586	0	35.349	0

p: p value

Table 7 Non parametric test for self-interest and other-interest across student and managerial participants

	F Statistic	Permutation p value
Self-Interest Student	0.408	0.887
Other-Interest Student	0.473	0.756
Self-Interest Managerial	1.749	0.105
Other-Interest Managerial	0.097	0.992

Additionally, to check for the confounding effects of self and other interest, we regress the self-interest and other-interest variables with proka. In all cases, the self and other-interest variables are not able to significantly better explain proka than the null model. (Student: $F_{SI} = 1.004$, $p_{SI} = 0.437$; Managerial: $F_{SI} = 1.679$, $p_{SI} = 0.108$; Student: $F_{OI} = 1.603$, $p_{OI} = 0.131$; Managerial: $F_{OI} = 1.425$, $p_{OI} = 0.190$). Since the purchasing and finance groups do not have a different mean level of self and other-interest, and also since self and other-interest do not directly influence proka, we do not use them as controls in the main model. In doing this, we operationalize the Occam's Razor and use the simplest possible model to explain proka.

The correlation table for the study variables for the student and the managerial respondents has been presented in *Table 8* and Manipulation checks

We need not check for Purchasing / Finance manipulation since that is a natural, uninduced manipulation. For generating self-interest, we introduce ideas for reduction of job-role (1: Strongly Agree, 7: Strongly disagree) within the organization if Purichem were to outsource. While the variances in the two groups are not heterogenous ($p > 0.05$), the data significantly deviates from normality for student as well as managerial participants. (Student: Shapiro statistic = 0.89, $p < 0.001$; Managerial: Shapiro statistic = 0.87, $p < 0.001$). Hence, we use Kruskal Wallis test to confirm the effect of manipulation. We find that the perception of reduction of job-role ($p < 0.05$) are significant for both groups.

Table 9.

Table 8 Correlation matrix for student participants

	Mean	SD	TA	SI	CC1	CC2	CC3	AS3	AS4	AS5	proka
TA	1.44	0.5	1	-0.01	-0.08	-0.11	-0.17	-0.03	0.11	0.12	0.08
SI	1.51	0.5	-0.01	1	-0.09	-0.15	-0.08	0.08	0.07	0.06	0.19

CC1	5	1.66	-0.08	-0.09	1	0.61	0.59	0.18	0.25	0.16	-0.36
CC2	4.43	1.75	-0.11	-0.15	0.61	1	0.7	0.29	0.17	0.22	-0.43
CC3	4.69	1.84	-0.17	-0.08	0.59	0.7	1	0.28	0.17	0.25	-0.47
AS3	4.89	1.64	-0.03	0.08	0.18	0.29	0.28	1	0.41	0.28	-0.14
AS4	4.91	1.46	0.11	0.07	0.25	0.17	0.17	0.41	1	0.42	-0.24
AS5	3.94	1.83	0.12	0.06	0.16	0.22	0.25	0.28	0.42	1	-0.28
proka	4.26	1.82	0.08	0.19	-0.36	-0.43	-0.47	-0.14	-0.24	-0.28	1

Manipulation checks

We need not check for Purchasing / Finance manipulation since that is a natural, uninduced manipulation. For generating self-interest, we introduce ideas for reduction of job-role (1: Strongly Agree, 7: Strongly disagree) within the organization if Purichem were to outsource. While the variances in the two groups are not heterogenous ($p > 0.05$), the data significantly deviates from normality for student as well as managerial participants. (Student: Shapiro statistic= 0.89, $p < 0.001$; Managerial: Shapiro statistic = 0.87, $p < 0.001$]. Hence, we use Kruskal Wallis test to confirm the effect of manipulation. We find that the perception of reduction of job-role ($p < 0.05$) are significant for both groups.

Table 9 Correlation matrix for managerial participants

	Mean	SD	TA	SI	CC1	CC2	CC3	AS3	AS4	AS5	proka
TA	1.36	0.48	1	0.07	-0.28	-0.31	-0.23	-0.1	0	-0.05	0.18
SI	1.45	0.5	0.07	1	-0.39	-0.36	-0.3	0	-0.18	0.01	0.37
CC1	5.1	2.18	-0.28	-0.39	1	0.78	0.73	0.15	0.17	0.04	-0.39
CC2	4.88	2.24	-0.31	-0.36	0.78	1	0.79	0.17	0.16	0.11	-0.42
CC3	4.97	1.95	-0.23	-0.3	0.73	0.79	1	0.17	0.16	0.11	-0.4
AS3	4.16	1.7	-0.1	0	0.15	0.17	0.17	1	0.33	0.33	-0.19
AS4	4.05	1.62	0	-0.18	0.17	0.16	0.16	0.33	1	0.49	-0.33
AS5	2.99	1.84	-0.05	0.01	0.04	0.11	0.11	0.33	0.49	1	-0.27
proka	4.55	1.84	0.18	0.37	-0.39	-0.42	-0.4	-0.19	-0.33	-0.27	1

Realism

The realism scale has three questions based on Pilling, Crosby, and Jackson Jr (1994). The three questions and their mean values on a scale of 1 to 7 (1: Strongly Disagree, 7: Strongly Agree) have been reported in Table 10.

Table 10 Realism test

	Student Participant	Managerial participant
The situation in the scenario was realistic	6.16	6.16
I can imagine myself in the situation	6.03	6.01
I can expect such situations to happen in organizations	6.48	6.23

Measurements and Scale validation

We validate the core-competency and asset specificity scales by running an exploratory factor analysis (EFA) on the student data and then confirming it with managerial data. We base our method based on the process prescribed by Churchill Jr (1979). First, we establish the content validity of the scales for the perception of asset specificity and core-competency by grounding them in existing research (Zaheer & Venkatraman, 1995). We generate 5 items for asset specificity and 6 for core-competency. Since the scales have not been explicitly tested in this context, we conduct an (EFA) with oblimin rotation to check for dimensionality, convergent and divergent validity (Netemeyer, Bearden, & Sharma, 2003). Though the data is not multivariate normal, the KMO measure of 0.69 suggests that the data is suitable for factor analysis (Black & Porter, 1996). We account for the non-normality in our EFA by using OLS estimation (Yuan, Marshall, & Bentler, 2002). We eliminate 2 items from the asset specificity scale and 3 items from the core-competency scale since they cross load or had

a low level of loading to obtain a clear two factor loading structure explaining 57% of the total variance. The scales were also found to be internally consistent. The loadings have been shown *Table 11*.

Table 11 Factor loadings for student data

	CC	AS
alpha	0.84	0.71
CC1	0.71	0.09
CC2	0.90	-0.02
CC3	0.83	-0.02
AS2	0.01	0.68
AS4	0.14	0.43
AS5	-0.02	0.92

The value of loadings on the two factors is substantially higher than 0.4 is an indicator of convergent validity (Kline, 2014). That the factors have cross-loading lesser than 0.1 are assumed to be zero supports of convergent validity – that the items load on one factor only (Gorsuch, 1983, p. 180) . Also, that the correlation between the factors is only 0.3 is a good indicator of discriminant validity. Overall our loadings generate the simple structure suggested by Thurstone (1947) and can be used for further analysis.

We confirmed the validity of the scale by confirmatory factor analysis (CFA) on the managerial data. We check of all the six items load on one factor and the resulting model shows a poor fit (CFI = 0.717, SRMR = 0.194). Next, we conduct a CFA to test the two-factor model. The fit indices suggest that the validity of the two-factor model (CFI = 0.971, SRMR = 0.078). The standardized factor loadings and the variance extracted have been shown in Table 12.

Table 12 Convergent validity for managerial data

	CC	AS	Cronbach Alpha	Omega ⁷	AVE
CC1	0.844		0.901	0.904	0.76
CC2	0.909				
CC3	0.855				
AS2		0.750	0.766	0.781	0.550
AS4		0.597			
AS5		0.829			

All the loadings on the factors are more than 0.5. The values of Cronbach alpha and Omega support the reliability of the instruments. While the AVE confirms convergent validity.

Propensity to recommend outsourcing (proka) is measured as a single item with scale from 1: Definitely No to 7: Definitely Yes. The variable is not normally distributed and hence we will use robust standard errors.

Data Analysis

Since we have a natural factor based model, we use structural equation modeling (SEM) to analyze the hypotheses. SEM has the key advantage that it analyses the entire model simultaneously and hence avoids the influence of high Type I error when models are analyzed as separate regression equations. Given the increasing bias of publishing studies with positive results, control of Type I error becomes extremely important (Fanelli, 2012). Bagozzi and Yi (2012) present a detailed explanation for other advantages of using SEM in factor based models.

1. ⁷ Omega is calculated as per the McDonald (1999) formula

Additionally, In order to ensure the relevance of our mediated model we fully comply with the suggestion of Rungtusanatham et al. (2011). Specifically, (1) we avoid the implicit Baron and Kenny (1986) procedure, (2) we use the Sobel procedure to test mediation (Sobel, 1982) and (3) we focus on the individual indirect effects. It should be noted that mediation can be ascertained by significant indirect effects (Zhao, Lynch Jr, & Chen, 2010).

The data has dichotomous exogenous variables, non-normal exogenous as well as endogenous variables and moderate sample size ($n \sim 250$). To account for all these conditions we use the WLSMV (weighted least square estimator with mean and variance adjust chi square) (Beaujean, 2014). WLSMV estimation is known to be the most efficient and effective way of controlling for Type I errors with non-normal dichotomous variables and our range of sample size (Hoyle, 2012; Ketokivi, 2019). When the sample size is greater than 500, simulation procedures have been known to be more reliable, but in our range of sample size, WLSMV is suitable (Nevitt & Hancock, 2001). We use the Lavaan package in R to conduct the analysis (Rosseel, 2012).

Since we have two separate groups – students and managerial respondents, we initiate the analysis by testing for invariance between the two groups (Beaujean, 2014). This analysis helps ascertain if the effect is due to the manipulations or merely due to the inherent difference between groups. We follow the standard 5 step methodology to assess the invariance of the measurement model: (1) we create a baseline model where all parameters are estimated separately for both groups to check for configural invariance, (2) we constrain the loadings across the groups to test for scalar invariance, (3) we additionally constrain the intercept across groups to check for metric invariance, (4) we

additionally constrain the variances and covariances to check for full factor invariance, and (5) we constrain the residuals across groups to check for error invariance (Steenkamp & Baumgartner, 1998). After this, we constrain the path loadings across groups and confirm structural invariance.

All the steps highlighted above generate multiple nested models and it is a common practice to test for similarity of nested models by comparing the χ^2 values. However, since our data is non-normal and our sample size is moderate, $\Delta\chi^2$ values can be extremely sensitive to the sample size (Beaujean, 2014; Cheung & Rensvold, 2002). Instead, we use fit indices to judge the invariance of the models. We use 0.05 as the threshold for SRMR (Byrne, 2013) and 0.95 as the threshold for NFI (Hu & Bentler, 1999). The results have been shown in the Table 13⁸.

Table 13 Invariance tests

	χ^2	df	p value	SRMR	NFI
Configural Invariance	19.872	40	0.997	0.036	0.982
Scalar Invariance	27.462	44	0.976	0.043	0.975
Metric Invariance	29.587	49	0.987	0.044	0.973
Full Factorial Invariance	40.054	52	0.887	0.052	0.963
Partial Error Invariance	36.580	51	0.936	0.050	0.966
Structural Invariance	98.986	66	0.005	0.080	0.909

We observe configural, scalar, metric and full factorial invariance. However, in the case of error invariance, the fit indices values are slightly above the threshold (SRMR = 0.059, NFI = 0.953). We conduct a Lagrange multiplier score test on the factor loadings to decide which factor loading to free and then run the model again (Bentler & Chou, 1992). The Score Test informs us of the expected change in parameter values (EPC) if we

⁸ For our models, $\chi^2 < df$, and hence RMSEA will be zero and CFI will be one (Chen et al., 2008). Hence, we do not use RMSEA and CFI.

release specific model constraints. Since the EPC value is highest for AS loading on AS4, we estimate both loadings separately for students and managerial respondents. The fit indices of this model are within the threshold (SRMR = 0.050, NFI = 0.966) and thus we claim partial error variance and use this model for further analysis.

Partial error Invariance suggests that scales of asset specificity and core competency can be used across groups without modification. However, the structural model is not structurally invariant since the SRMR (= 0.055) and NFI (=0.909) values are beyond the threshold. Therefore, we selectively free the path loadings and estimate them separately for student and managerial respondents. For this, we again use the Lagrange multiplier score test on the path loadings. We continue the process till all paths with significant EPC values are released and estimated separately for the two groups.

In the first run, we free the path from SI to CC and estimate it separately for students and managerial respondents. The path loading from the structural invariance models and the model with freed loadings is presented in Table 14.

Table 14 Change of path loading 1

Path	Model	Respondent	Loading	p
SI to CC	Constrained	Joint	-1.089	0.000
	Free	Managerial	-1.671	0.000
		Student	-0.364	0.156

The table suggests that while the constrained model conveyed that the SI to CC path is significant, freeing up the path informs us that the significance is drive by managerial respondents and not student respondents. The other paths released and their change of loading are reported in Table 15

Table 15 Change of path loading 2

Path	Model	Respondent	Loading	p
TA to CC	Constrained	Joint	-1.032	0.000
	Free	Managerial	-1.270	0.000
		Student	-0.352	0.173

Since no other paths have a significant EPC after this, we use this as our final model where three paths are estimated separately for students and managerial respondents. The structural model is represented in Figure 2. The double arrows indicate the paths that are estimated separately. The data has a good fit with the model ($\chi^2 = 51.342$, $df = 64$, $p = 0.873$). Although the SRMR is slightly larger (0.058), the NFI value (0.953) is acceptable.

Results

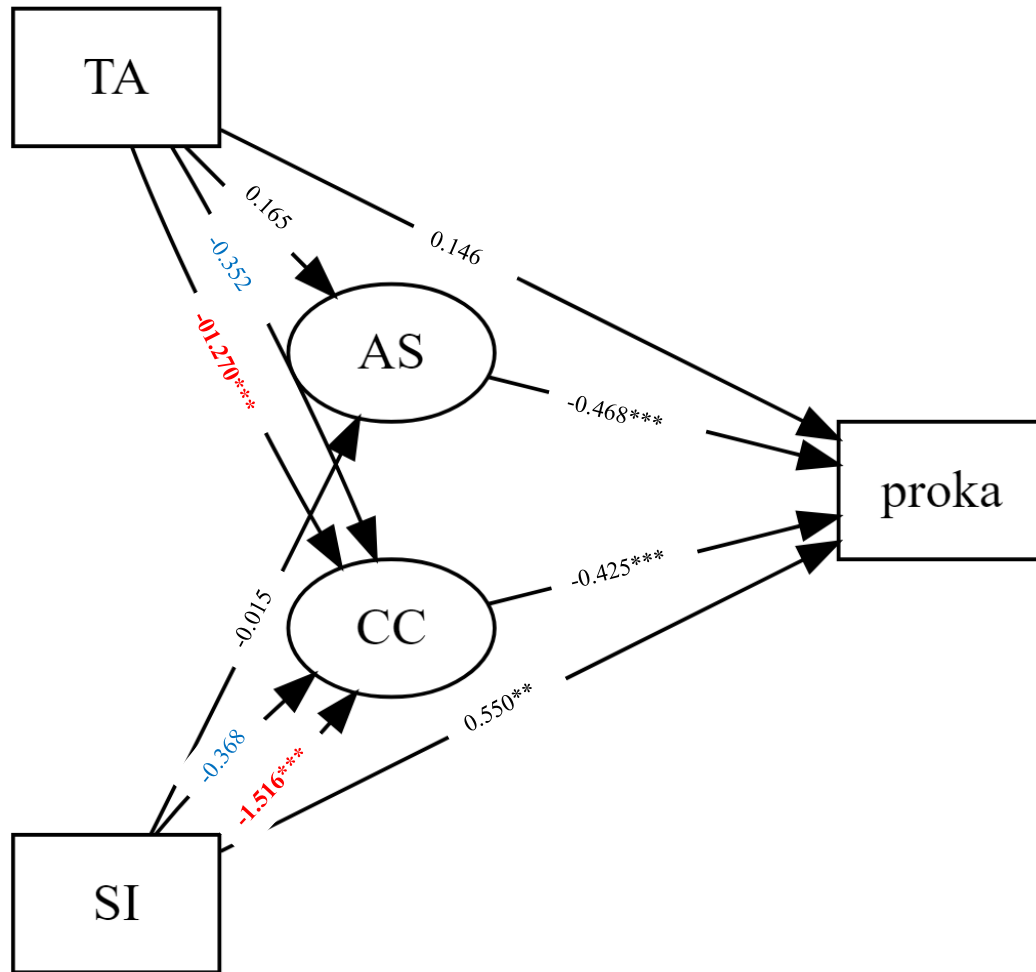
Our hypotheses have three levels of results – (1) results that are valid for both managers and students, (2) results that are applicable only to managers, and (3) results that are applicable only to students. The difference could possibly be a result of the difference of variance in actual TA between the managers and students. Owing to a longer and actual association with the knowledge asset being outsourced, managers are likely to have a higher variance in actual TA than the students. Thus, treatments that need professional experience are likely to be different between managers and students (Moritz et al., 2013). The complete results have been presented in Figure 2 Structural Model.

H1a/ b: We are not able to reject the null hypothesis that TA does not influence PROKA ($p = 0.508$). The act of having greater affinity towards a decision does not directly bias managers towards recommending outsourcing. However, self-interest has a

direct influence on PROKA ($p = 0.010$). Participants who perceive a threat to their job-role / power are less likely to recommend outsourcing of knowledge assets.

H2a/ b/ c/ d: TA does not lead participants to differently perceive AS ($p = 0.319$). TA however leads managers to differently perceive AS ($p < 0.001$). Supply chain managers are more likely to view purchasing transactions as core than the finance managers. This effect was not seen among supply chain and finance students ($p = 0.173$). SI has a very influence on AS and CC. TA does not influence the perception of AS ($p = 0.930$). Among managers, SI has a significant influence on CC perception ($p < 0.001$) with self-interested managers more likely to perceive purchasing transactions as core compared to the neutral managers. Among students, SI does not influence the perception of CC ($p = 0.153$).

Figure 2 Structural Model



*** $p \leq 0.001$, ** $p \leq 0.01$

H3a/ b: The perception of AS and CC is inversely related to PROKA.

Participants who perceive outsourcing purchasing transactions to lead to higher AS are less likely to recommend outsourcing ($p < 0.001$). Also, participants who perceive purchasing transactions to be core are less likely to recommend outsourcing ($p < 0.001$).

H4a/ b/ c/ d: AS neither mediates the relationship between TA and proka ($p = 0.333$) nor the relationship between SI and proka ($p = 0.930$). However, CC mediates the

relationship between TA and proka ($p = 0.001$) as well as the relationship between SI and proka ($p = 0.001$).

The path loadings have been presented in Figure 2. On the paths where we do not have invariance, the student loadings have been shown in blue and the managerial loadings have been shown in red.

Closure

The experiment asserts the validity of both TCE and RBT. We show that decision makers do consider asset specificity and core competency when making the knowledge outsourcing decision. Also, since this effect is invariant across the two treatments and across student and managerial samples suggests the robustness of these variables in influencing the knowledge outsourcing decision.

The core message is that of the influence of self-interest on proka. The experiment shows that self-interest could influence decision makers to subvert the decision to favor their self-interest. There is also an indirect effect through the perception of core-competency. Self-interest drives managers to differently perceive core-competency – managers who are likely to have a loss of self-interest are more likely to perceive the asset as core than managers who have a neutral self-interest. This differential perception would thus make managers with a loss of self-interest less likely to recommend outsourcing. Thus, in addition to the direct subversion based influence, self-interest has also an implicit influence through the perception of core competence. We see no effect of task affinity directly or indirectly on proka.

Table 16 Results

Hypothesis	Status	Joint Estimation		Student Respondent		Managerial respondent	
		Estimate	p value	Estimate	p value	Estimate	p value
H1a: DA to proka	Not supported	0.146	0.508				
H1b: SI to proka	Supported	0.550	0.010				
H2a: DA to AS	Not supported	0.165	0.319				
H2b: DA to CC	Supported for managers			-0.352	0.173	-1.270	0.000
H2c: SI to AS	Not supported	-0.015	0.930				
H2d: SI to CC	Supported for managers			-0.368	0.153	-1.516	0.000
H3a: AS to proka	Supported	-0.468	0.000				
H3b: CC to proka	Supported	-0.425	0.000				
H4a: AS mediation in DA to proka	Not supported	-0.077	0.333				
H4b: CC mediation in DA to proka	Supported for managers			0.150	0.187	0.540	0.001
H4c: AS mediation in SI to proka	Not supported	0.007	0.930				
H4d: CC mediation in DA to proka	Supported for managers			0.156	0.164	0.645	0.001

CHAPTER 4

DECISION TYPOLOGY OF KNOWLEDGE ASSET OUTSOURCING

Say not, "I have found the truth," but rather, "I have found a truth."

Khalil Gibran

Most operations and supply chain management (OSCM) research on outsourcing assumes a firm level of analysis and assumes that a firm follows a structured approach with clearly defined steps such as problem definition, analysis and decision making (Mello et al., 2008). There is an implicit assumption that all members of the firm share the same goals and that all members of the firm amicably share information (Mintzberg, 1991). Research further assumes that firms use transaction cost economics (TCE) or the resource-based theory (RBT) to analyze whether to outsource (Tsay et al., 2018). This analysis needs to be rational and politics should be avoided (Eisenhardt & Bourgeois III, 1988; Marshall et al., 2015). Additionally, each outsourcing decision is viewed discretely - independently of the previous decisions or the prospective impact of the current decision (Tsay et al., 2018). These assumptions reflect the views of the planning (design) school of strategy that suggests an analytical approach and assumes that all information worth knowing is available and that human behavior does not matter (Mintzberg, 1991).

These ontological assumptions for strategic knowledge asset outsourcing (KAO) decision is not in line with the current research on strategic decision making. Overall, the planning school endures substantial criticism and the current strategy literature accepts that strategy is made by emergent interactions of decision makers at multiple levels of the organization (Hendry, 2000). It is also accepted that strategic decisions tend to be

political, and that politics may not always have an adverse impact (Mintzberg, 1983; Smith et al., 2009). Also, strategy decisions are currently thought to be exercises of sharing data and mental frames that managers involve themselves in (Kaplan, 2008).

Besides this difference with strategy literature, theoretical outsourcing decision processes are also known to differ from the actual practice processes of outsourcing (Hunter & Hall, 2011). Literature that describes practice suggests that the strategic outsourcing decisions are complex, non-structured and highly contentious (Pettigrew, 1973). Further, the outsourcing decisions are not independent and decision makers bring in their previous experience with other organizational decision in the outsourcing decision (Lacity & Hirschheim, 1993). Thus, the current state of OSCM research in the outsourcing decision process seems to have a substantial gap with the literature on strategy as well as with practice.

Given these gaps, it is not surprising that our theoretical constructs are not able to describe, explain or predict knowledge outsourcing decisions in practice (Lacity et al., 2011). For example, while the resource-based theory suggests that core-competence processes must be performed internally, firms are not averse to outsourcing core knowledge assets (Barney, 2012; Quinn & Hilmer, 1994). And, contrary to the transaction cost theory that assumes opportunistic suppliers and preaches the dangers of outsourcing assets that lead to asset specificity based hostage situation, in some firms, suppliers are viewed as partners and asset specificity is not always assumed to be problematic (Williamson, 2008; Womack, Jones, & Roos, 2007). Additionally, there are anecdotal situations such as that of General Motors insourcing routine information

systems processes and Tesla outsourcing strategic electric battery knowhow that seems to be atheoretical and unexplainable (Murphy, 2012; Zuleta, 2017).

Such gaps between strategic outsourcing and strategy theory and between outsourcing theory and outsourcing practice can be problematic on multiple counts. For one, as OSCM researchers (and teachers) we are failing in our primary purpose of contributing to theory in what could arguably be the most important decision in supply chain management (Van de Ven, 1989). Two, it further alienates practice and practitioners from researchers and instigates extreme beliefs that theory could be harmful to practice (Ghoshal, 2005). Three, the limitation leads to numerous newspaper articles that question the value of academic research and erodes the status of academicians (Schiller, 2011). And four, since knowledge outsourcing has known to sway firm performance as well as presidential elections, the gap prevents us from helping firms make the right decision and from helping people vote for the right president (Holcomb & Hitt, 2007; Mankiw & Swagel, 2006).

The arduous task of bridging these gaps that we present for knowledge outsourcing research can't be accomplished in one research paper. We initiate the path for narrowing the theory and practice gap by offering a practice induced typology for knowledge outsourcing decision process (Doty & Glick, 1994). We use the structuration theory framework and look for interactions between decision makers and the firm level norms to conduct the study and align the knowledge outsourcing process research and the strategy process research (Giddens, 1984; Hendry, 2000). Based on case research, we frame ideal types of processes adopted by individual managers to drive their personal

solutions as firm decisions. We show the antecedents of the processes adopted and the consequences.

Our typology tries to achieve a balance between simplicity, accuracy and generalizability (Ketchen & Hult, 2007). We reduce the multiple decision processes in the eleven cases to four styles based on the exchange of data and mental frames. We try to use these frames to accurately explain the current KAO decision. Additionally, we use our ideal types to predict the outcomes of the cases described by Lacity and Hirschheim (1993) and assess for the typology's generalizability. Through these steps, we hope to fulfill the three conditions for a good theory – to be able to describe, explain and predict (Kerlinger & Lee, 1973). Also, we hope that these simplified and non-complex depictions lend a structure to the field and allows future researchers to empirically examine the applicability and also to develop contingencies that assist firms in controlling the KAO process (Christensen, 2006).

Some fields (e.g. supplier relationships) have a substantial existence of typologies and structure, and so newer typology constructions tend to take an empirical survey oriented approach. These studies merge, modify, and refine an existing typology to develop more relevant classifications (e.g. Kim & Choi, 2015). However, for topics like knowledge outsourcing decision processes, with sparse previous research, the general approach is to either develop a conceptual typology or to inductively build a typology from case studies (Ashenbaum, Salzarulo, & Newman, 2012). Since our objective is to reduce the research-practice gap, we focus on getting information from decision makers and then inductively build our typology. Also, based on the current stream of strategy, we focus on the individual decision maker and construct the typology based on the decision

maker's perception. This focus on understanding the decision process in natural settings and the attention on decision maker's perception make the naturalistic paradigm suitable for our study. In the sections that follow we explain the idea of typology, our method of naturalistic paradigm and then present our typology based on the analysis of our data.

Typology Literature

Typology has often been confused with classification and thus has been subject to unwarranted criticism. Typologies have been described as mere ordering mechanisms (Rich, 1992) and non-theoretical descriptive artifacts (Bacharach, 1989). There is also a feeling that typologies tend to disregard rich information in the drive towards parsimony and that they do not explain the mechanism of action (Scott & Davis, 2015). In this section, explain the concept of typology and address these criticisms. We also describe design elements in our research to mitigate the limitations of typologies.

We define typology as multivariate conceptual groupings of ideal types (Doty & Glick, 1994). The idea of ideal types is not to classify the outsourcing decision process as a member of one of the typological groups, rather it is to be able to measure the distance of an actual decision process from the ideal types (Venkatraman, 1989). For example, in the classic Fisher's (1997) supply chain typology of efficient and reactive supply chains, it would be difficult to find a firm that has perfectly efficient or perfectly reactive supply chains. However, the distance of multiple supply chain attributes from some version of ideal efficient or reactive supply chains can be measured (Gonzalez-Benito, 2007). Also, most decision processes must typically be closer to one of the ideal types. That is, the characteristics of the ideal types must include variables that are frequently found to occur

together (Shah & Ward, 2007). The creation of such ideal types allows the typology to be theoretical, in that, the typology can describe, explain and predict the specific dependent variables (Kerlinger & Lee, 1973).

A distinct feature of typologies is that they lend structure to the field and motivate future research (Doty & Glick, 1994). For example, Miles and Snow (1978) typology of defender, prospector and analyzer firms was designed based on a small and seemingly non-representative sample of firms in four industries – college text book publishing, electronics, healthcare and food processing. The typology did not predict specific performance implications for firms with either of the three ideal types. However, the typology described the three ideal types in detail and deliberated the difference in their approach to the external environment and organizational structure. This approach created a framework for the disparate field of firm strategy and spawned multiple research papers validating the research and exploring its applicability in diverse areas like firm performance, supply chain performance, strategic alignment and organization learning (Fox-Wolfgramm, Boal, & James, 1998; Hult et al., 2006; Sabherwal & Chan, 2001). We aspire for our typology to provide similar support to research.

Before we explain our method, we clarify about the differences between typology and taxonomy since the terms have been used interchangeably in research. Taxonomy involves the creation of multiple ordinal scales and a cartesian approach to bracketing subjects (Doty & Glick, 1994). The periodic table is a taxonomy where a movement along the column signifies the increase of an electron and the movement along the row signifies the addition of an electron ring. Every element has a specific spot in the table. Kim and Choi (2015) present a taxonomy of buyer-supplier relationships based on

relational posture and relational intensity. Every buyer-supplier relationship can be mapped and placed on this bivariate taxonomy.

The word ideal in ideal types does not necessarily have a positive connotation. For example, Robinson and Bennett (1995) present ideal types of deviant behaviors. The ideal types are thus better explained as conceptual exemplars that can be operationalized to describe, explain and predict a phenomenon (Doty & Glick, 1994).

Structuration theory

Before getting into the method, we would like to add a note on the concept to structuration (Giddens, 1984). This theory presents the human actor as a product of and a developer of the structure around her. Here, structure represents the norms, rules and routines that bind and facilitate the actor towards a certain set of actions (Whittington, 2010). In the corporate context, the duality of the structure and the actor can be stated in terms that the actor forms the structure, and once formed, the structure then drives the actor. Any action, according to the structuration theory is the result of a dynamic interaction between the structure and the agent (Hendry, 2000).

Economic theories assume that the agency is embedded in the actor (Jensen & Meckling, 1976). Population ecology theories suggest that the agency is embedded in the environment (Hannan & Freeman, 1977). The structuration theory asserts that agency is simultaneously embedded in both the structure and the actor (Jarzabkowski, 2008). For example, the strategic actions of actors may lead to formation of norms in the organization. These norms get embedded as either formal rules, routines or expected behavior. Once embedded these norms constrain action. We use this idea in how we

observe the decision makers and study their actions, the structural antecedents of their actions and the structural consequences of their actions.

Method

To create a practice relevant typology, our focus is on documenting and classifying actual decision making approaches from the *lived experiences from point of view of those who live it* (Schwandt, 1994, p. 118). These experiences provide us rich data to understand the complexity and messiness of knowledge outsourcing decision processes. We transcribe the interviews and code and analyze them as per the bounded theory method (Charmaz, 2000) and then, subsequently construct the typology of knowledge outsourcing decision process.

The typology describes the four ideal types of decision processes adopted by decision makers to influence other decision makers and to impose their individual solution as the firm level decision (Kaplan, 2008). Thus, the unit of analysis is the decision opportunity and the level of analysis is the individual decision maker. Here, we use the Giddens (1984) framework to position the decision makers as partially independent agents who are simultaneously influenced by and try to influence each other. These decision makers are constrained by the norms of the firm and they simultaneously contribute to developing new firm norms. This framing has been used in research to study the strategic decisions like those of developing new business lines and sustainable operations (Hengst et al., 2020; Kaplan, 2008).

For this study, we consider the perception of decision process legitimacy (LGT) and the comprehensiveness (CMP) as two dependent variables. These dependent

variables emerge inductively from the data analysis. They are also supported by the literature on procedural rationality and claim that if the managers perceive the decision process to be legitimate and if the decision process analyses the process using multiple perspectives the decision is likely to be good (Kim & Mauborgne, 1995; Riedl et al., 2013). The process of inducing theoretical codes from interviews has been described below. It should be noted that knowledge processes outsourcing decisions have delayed performance outcomes. That is, the validity of the outsourcing decision can only be ascertained a few years after the decision. Since we only sample decisions taken between 2016 and 2020 (last 4 years), we do not find it feasible to use the current perception of performance of outsourcing decision as the dependent variable.

We did an exhaustive review of the strategic decision processes literature to help us formulate these dependent variables and our research protocol – that is, we did not start from a completely blank slate (Eisenhardt, 1989). We believe that no research can start without a priori theoretical background. In this, we are supported by Pierce's (1868, p. 140) claim that *we cannot start in complete doubt*. Background theories provide us with a lens that guides and focuses our attention. So, by conducting a detailed literature review, we are not violating the assumptions of induction, but rather make the induction more fruitful. Also, by stating this, we are providing clarity towards the implicit bias that researchers tend to have in using certain variables or theories (Eisenhardt, 1989).

Trustworthiness

Every research paradigm needs a criterion for goodness and rigor. The idea is to demonstrate the truth value, applicability, consistency and neutrality of the research

(Lincoln & Guba, 1986). Positivist quantitative researchers use forms of validity as measures of quality. Researchers using qualitative studies in naturalistic paradigm use the concept of trustworthiness and authenticity (Lincoln & Guba, 1985). Per se, perfect validity or truth value is not possible. It is possible that the same data leads to different interpretations for both qualitative as well as quantitative research (Silberzahn et al., 2018). The aim is rather to be clear about the possible biases and to incorporate elements in design that minimize their impact. We adhere to this tenet and state our biases and the design interventions to reduce their impact in the paragraphs below. We use the framework of Lincoln and Guba (1986) to explain how we attain credibility, transferability, dependability and confirmability.

Credibility: This corresponds to internal validity of positivist research and is a measure for truth value. However, while the positivists use internal validity to confirm the absence of any confounding factors, that is they try to abstract simplicity from a complex world, constructivists try to preserve and understand the complexity (Guba, 1981). So, credibility is created by acknowledging the complexity. We want to make a note here of our understanding of triangulation which is a method used to asset credibility. Our definition matches with Denzin's changed views (Flick, 2004). Denzin had initially propounded triangulation as a validation exercise. However, he later accepted the criticism of his views that in constructivist research, the perceptions of one respondent cannot be verified by confirming them with another respondent. But triangulation can definitely add to the breadth of understanding. Going by this belief, triangulation for us is a means to expand the understanding of the context rather than a

confirmatory exercise (Denzin & Lincoln, 1994)⁹. The steps for credibility using the framework of Guba (1981) have been mentioned in Table 17. Table 17: Research

Credibility

Prolonged Engagement	<ol style="list-style-type: none"> 1. Establishing rapport with respondents through mutual contacts 2. Ensuring conversations and engagement prior to the main interview
Peer Debriefing	<ol style="list-style-type: none"> 3. Detailed conversations with consultants and service providers involved in outsourcing of knowledge assets to discuss interviews and insights 4. Conversations with dissertation committee chair
Triangulation	<ol style="list-style-type: none"> 5. Newspaper and trade journals to corroborate outsourcing context 6. Consultants and service providers to verify process details. 7. Use of multiple respondents in four cases 8. Repeating questions and using multiple perspective interviewing (Beitin, 2012) 9. Using newspaper reports to understand the context 10. Conversations with consultants and suppliers associated with outsourcing 11. Confirming results with data from Lacity and Hirschheim (1993)
Member checks	<ol style="list-style-type: none"> 12. Sharing the transcript with the interviewee 13. Discussing first level codes with interviewee

Transferability: This corresponds to external validity and generalizability of research findings to a heterogeneous sample of firms. Quantitative researchers collect large samples to attempt to hide the random variation induced by heterogeneity. However, since some organizational and environmental variable is likely to change over time, all generalizability is known to *decay* over time (Cronbach, 1975). And, given the limited sample size, qualitative analysis can never aim to be completely generalizable (Eisenhardt, 1989). So, the aim of transferability is to provide a *thick description* of the

⁹ Denzin had initially propounded triangulation as a validation exercise. However this was criticized since

context and to ground the findings in that specific context (Geertz, 2008). The applicability of the research in alternate context would depend on the distance of those alternate contexts from the described contexts. The steps of transferability have been mentioned in Table 18.

Table 18 Research Transferability

Purposive Sampling	<ol style="list-style-type: none"> 1. Samples purposively selected to discuss range of knowledge products 2. Samples purposively include ‘interesting’ cases as defined by consultants and outsourcing service providers
Collect thick descriptive data	<ol style="list-style-type: none"> 3. Participants conveyed and convinced about participant anonymity 4. Use of open ended questions in interview
Develop and present thick descriptive data	<ol style="list-style-type: none"> 5. Newspaper and trade journals to corroborate outsourcing context 6. Consultants and service providers to verify process details. 7. Use of multiple respondents in four cases 8. Repeating questions and using multiple perspective interviewing (Beitin, 2012)

Dependability: This denotes the consistency of research and is the equivalent of reliability in quantitative positivist research. In quantitative research, with questions as the instrument, all deviation from reliability is attributed to instrument errors. The task is to calculate and minimize this error. In qualitative research, with humans as instruments, the deviation from variability is attributed to some form of human error. This error cannot be avoided and so contrary to quantitative methods, the error is recognized as *trackable variance* (Guba, 1981). Towards this, we provide a thick description of the cases in Appendix 2 that details the context and allows tracking the variance to different contextual reasons. In addition to recognizing the variance in the text, the other steps for dependability have been mentioned in Table 19

Table 19 Research dependability

Stepwise replication	1. Use of more than one case for the same typology
Audit trail	2. Audio recordings of the interviews have been maintained 3. Field notes have been maintained 4. The basis for coding has been maintained
Participant variance	5. Interview conducted at the time convenient to the participant to avoid lethargy 6. Participant conveyed the importance of research to motivate accurate and reliable response

Confirmability: This denotes the neutrality of research and is the equivalent of objectivity in quantitative positivist research. It is previously believed that research results were objective and neutral. But it is now accepted that all results are essentially dependent on the method and that the method reflects the predisposition of the researcher. This acceptance of the role of methods as well as the researchers predispositions suggests that it is very difficult for any research to assume a neutral position. Guba (1981) highlights that even in physical sciences (e.g. the form of light), the results depend on the type of experimental method used. Qualitative researchers accept this limitation and recognize that the threat to confirmability could come both from researcher's dispositions as well as the participant's biases. We clearly mention these limitations in our results. Here, we would like to mention the efforts on researcher reflexivity. The first researcher as the interviewer has an inherent bias against outsourcing of knowledge assets and believes that political mechanisms dominate rational data exchange in strategic decisions. To mitigate the influence of this bias, the researcher had detailed discussions with consultants and service providers to understand cases that proved the author's dispositions as false. Also, during the analysis, the researcher consciously looked for

disconfirming evidence to prove the disposition wrong. Additionally, none of the questions in the protocol specifically ask for or suggest the use of politics or the firm's inherent temperament to outsource.

Table 20 Research confirmability

Triangulation	1. Mentioned in Table 17
Reflexivity	2. Mentioned in the explanation above

Sampling

In qualitative research, sampling entails the *selection of data sources from which data are collected to address the research objectives* (Gentles et al., 2015). Our unit of analysis is a KAO decision opportunity and thus our samples include decision makers who have been directly involved in the KAO decision process. We use snowball sampling to reach out to decision makers with such experience of being involved in an outsourcing process in the last 4 years. Such a method of targeted snowball sampling to access information rich cases for an in-depth study has been regarded as an effective way of purposeful sampling for theory building research (Eisenhardt, 1989; Merriam, 2009, p. 79).

We attempt to address the duality criterion of *being situationally grounded* and at the same time *seek a sense of generality* (Ketokivi & Choi, 2014). Towards staying situationally grounded, we seek two decision makers or more than two sources of information for the same decision opportunity wherever possible. Also, we follow an exhaustive semi-structured interview protocol (see Appendix 1) to ensure the collection of rich information. To ensure generality, we select decision opportunities from India and

the USA and with different types of knowledge assets and different types of firms based on the snowball sampling method. We are reasonably certain that with this level of diversity, we would be able to achieve an acceptable level of generality.

Table 21: Sample information

Sr	Firm	Code	Location	Type	Outsourcing opportunity
1	Healthcare provider	HOSP	USA	Single Unit	Data center and data security
2	CPG	CPG1	USA	Multi country	Supply chain planning systems
3	CPG	CPG2	USA	Multi country	Purchasing transactions
4	Iron and Steel	IRST	India	Multiple units, single country	Purchasing transactions
5	Multibusiness conglomerate	CNGL	India	Multiple units, single country	HR systems
6	Automobile ancillary	AUAN	India	Multiple units, single country	MRO management
7	Chemicals	CHM1	India	Multi country	Equipment Maintenance
8	Chemicals	CHM2	India	Multiple units, single country	Purchasing transactions
9	Discrete Manufacturing	DMFG	India	Single Unit	Equipment maintenance
10	Polymer Products	PMFG	India	Multiple units, single country	MRO management
11	Apparels	APRL	India	Single Unit	IS operations

Since our objective is to generate a typology, we do not start with a specific sample size requirement. Rather, we continue data collection until we reach a state of theoretical generalizability (Glasser & Strauss, 1967). We define theoretical saturation as the stage when new data fits in the existing typology and does not require us to redefine or modify the framework. We are able to induce a stable typology with 11 decision opportunities. The information about the selected samples is included in Table 21. The details about all the sources of information used for the case is presented in

Table 22.

Table 22 Sources of information

Firm Code	Internal Respondents	News reports	External respondent
HOSP	1	-	Supplier
CPG1	1	Yes	Consultant
CPG2	2	-	-
IRST	1	-	Supplier
CNGL	2	Yes	Consultant
AUAN	1	-	Supplier
CHM1	1	Yes	-
CHM2	2	-	Supplier
DMFG	2	Yes	Supplier
PMFG	1	-	-
APRL	1	-	-

Data collection and analysis

Data is collected from internal respondents using a semi-structured questionnaire. The use of a semi-structured pattern allows us to adjust the questions based on the specific skills and knowledge of the interviewee (Given, 2008). Also, the fluid interview protocol ensures that interview stays on track and allows the interviewer sufficient flexibility to gather the necessary and relevant information from the interviewee (Fontana & Frey, 1994). The interview protocol is designed as per the principles listed by McNamara (2009) and has been included in Appendix 1. The interview protocol was developed based on a careful review of the literature and the protocol was refined by three pilot interviews conducted on decision makers in a similar situation (Kvale, 2008).

We interview the participants online and follow a three step method to collect data from the informants (Gubrium et al., 2012). We initiate the conversation with an email requesting an interview and refer to some mutual contact. The email includes information about the study and the researchers. The second step is a phone call to

establish a rapport with the interviewee and establish the expectations for the next interview. The duration of this call is approximately 20 minutes. The third step is an audiovisual online call. The average duration of this interview was 70 minutes. Only the audio of the interview is recorded. The recording is transcribed within 48 hours of the interview. Our final data collection exercise has 15 respondents. The information about these participants is presented in Table 23.

Table 23 Respondent Information

	Firm Code	Respondent	Designation	Work Experience (Years)
1	HOSP	R1HOSP	Head of Information Systems	18
2	CPG1	R1CPG1	Operations Excellence Manager	25
3	CPG2	R2CPG2	Supply Chain Planner	9
4	CPG2	R1CPG2	Purchasing Category Manager	12
5	IRST	R1IRST	Purchasing Manager	15
6	CNGL	R1CNGL	HR Manager (Group)	23
7	CNGL	R2CNGL	Recruitment Head (Division)	14
8	AUAN	R1AUAN	Central Materials Manager	13
9	CHM1	R1CHM1	Facility Head of Maintenance	19
10	CHM2	R1CHM2	Purchasing Manager	10
11	CHM2	R2CHM2	Manufacturing Planner	12
12	DMFG	R1DMFG	Head of Maintenance	16
13	DMFG	R2DMFG	Works Manager	21
14	PMFG	R1PMFG	Store executive	12
15	APRL	R1APRL	Information Systems Manager	8

We analyze the data using the simultaneous interview, coding, and analysis method prescribed by grounded theory (Corbin & Strauss, 2014). In the first step, we use open coding in the first transcript to assign nomological codes to every few lines of the transcription. We then group the nomological codes and assign them theoretical labels. Finally, we use axial coding and collate the text that has been assigned similar theoretical

codes. Based on the collation we create a type label for the decision process and the intensity of the dependent and other relevant variables for the decision process for the first transcription. We try to fit the same coding and type label structure on the second transcription. Since we were unable to explain the second transcription with the same type label, we generate a new type label for the second transcription. We continue the process by sequentially adding additional transcriptions. In a few cases, we had to modify the initial type labels for the decision processes so that we could parsimoniously explain the decisions with as few ideal type labels as possible (Doty & Glick, 1994). We stop the interview and coding process after 11 cases since the newer cases could be explained by the existing labels.

We accessed newspaper and magazine articles for four decision opportunities. Additionally, we spoke with consultants or suppliers of outsourcing for seven decision opportunities. The conversation with consultants and suppliers was unstructured. The purpose of the newspaper articles and the consultant / supplier conversations was to understand the context of the decision making situation. Based on the detailed analysis of the interviews and understanding of the context through newspaper articles and conversations with consultants / suppliers, we create a detailed description of the cases that has been presented in *Appendix 2*. We highlight the generic decision process characteristics from the cases and then describe the typology.

Decision process characteristics

We observe that similar to our expectation, the process to outsource knowledge assets is highly unstructured and complex. The decision is not part of a long term

strategic plan and is typically a response to some key changes that create the perception of threat to firm survival. The decision makers did not explicitly use authority and used the decision process to create a perception of legitimacy. The decision was initiated by different senior management members and all of them used different mechanism to convince other employees about the validity of the decision and the process. The details of the planned decision process have been provided in Table 24.

Table 24 Planned decision process

Firm Code	Decision Initiator	Planned decision process
HOSP	Head of IS	Present data to the CEO and the board using metrics that are important to them
CPG1	Top Management	Create enthusiasm about unity and drive the plan
CPG2	Head of Finance	Convince with data
IRST	Top Management	Use forged data to convince the need to change
CNGL	Head of HR	To show how outsourcing would solve division level problems
AUAN	Top Management	Extensive sharing of data
CHM1	Top Management	Institute a fair process of assessment
CHM2	Finance Head	Generate common feeling of threat to survival and leverage that to motivate outsourcing
DMFG	Top Management	Use maintenance head's goodwill to convince plant engineers
PMFG	Top Management	Quickly conduct a seemingly fair process
APRL	Top Management	Use customer audit as a driver for the decisions

However, in 8 out of the 11 cases the outsourcing process did not materialize as envisaged by the initiator because of stray events. These stray events seemed to be unpredictable and random disturbance that necessitate a change to the planned process. The stray events have been highlighted in Table 25. So, the final decision process used by

the initiator was essentially a response to these stray events in a way that the original goals could be achieved. Here, we would like to note that in most cases the knowledge outsourcing process had two goals – explicit goals that were directed at efficiency and implicit goals that were directed at some internal conflict. The details of these goals have been provided in *Table 26*.

Table 25 Stray events in the decision process

Firm Code	Stray events
HOSP	Top management's request to expand scope of outsourcing
CPG1	Strong resistance by key countries
CPG2	Group action of country managers
IRST	Revelation of fake benchmark numbers
CNGL	Opposition by a high performing division
AUAN	Service level assurances expected by head of production
CHM1	-
CHM2	-
DMFG	-
PMFG	Political connections of plant manager
APRL	Revelation of audit report of competitor firm

Legitimizing the decision: An interesting aspect in all the decision processes was that the top management did not use their authority to impose the decision, rather they sought to create a legitimate broad acceptance (Bitektine & Haack, 2015). Decision initiators pursued the legitimacy of not just the senior functional heads but also lower level engineers and executives. The legitimacy tactics used by the decision initiators in these 11 cases have been highlighted in Table 26 .

Table 26 Outsourcing goals

Firm Code	Decision Initiator	Initiation driver
HOSP	Head of IS	e: To increase IS reliability i: To ensure high status
CPG1	Top Management	e: To meet cost reduction targets i: To regain control over regional offices
CPG2	Head of Finance	e: To reduce cost i: To regain control over regional offices
IRST	Top Management	e: To survive the economic downturn i: To obtain a fast decision
CNGL	Head of HR	e: To standardize processes i: To obtain visibility into divisional operations
AUAN	Top Management	e: To optimize effort on value added activities i: -
CHM1	Top Management	e: To improve machine reliability i: -
CHM2	Finance Head	e: To ensure long term survival of the firm i: To reduce the powers of purchasing function
DMFG	Top Management	e: Cost reduction to survive shrinking market i: -
PMFG	Top Management	e: To improve machine reliability i: To reduce cost of maintenance
APRL	Top Management	e: Customer requirement i: Formalize systems

e: Explicit goal, i: Implicit goal

Typology

We view the outsourcing decision making situation as a social arena where managers systematically try to influence each other (Kaplan, 2008). That is, managers attempt to convince others about their individual opinions. The managers who are able to impose their solutions as the organizational decision are the winners of the decision

process while the managers who face a prospective reduction of power and influence within the firm are the losers. The process also includes managers who change their opinion and align their views with the winning managers. The list of winner managers, influenced managers and loser managers in the 11 cases have been highlighted in Table 28. Given this ontology of an arena with winners and losers, we create our typology based on the systems of influence used by decision initiators.

Table 27 Legitimacy tactic

Firm Code	Legitimacy tactic
HOSP	Transparency in data
CPG1	Allowing feedback
CPG2	Continuous sharing / exchange of data
IRST	Using a quantitative benchmark as the basis of the decision
CNGL	Inclusive decision making
AUAN	Using a framework as the basis of the decision, open survey
CHM1	Using internal experts as the basis of the decision
CHM2	Inclusive decision making
DMFG	Using firm survival as the common basis for the decision making
PMFG	Use of committee, transparent process
APRL	Using customer requirement as the basis of the decision

Decision influencers use two levers to share their influence. The first lever is an attempt to influence through the sharing of information. This follows the assumption that decision making conflicts arises because managers have access to different datasets and that a collaborative exchange of information could alleviate conflicts (Lightle, Kagel, & Arkes, 2009). The focus then is on effective sharing of information through the use of relevant means such as tables, charts and graphs. The second lever, is the attempt to influence through changing mindsets (Weick, Sutcliffe, & Obstfeld, 2005). This tactic is based on the belief that decision makers could interpret the same information very

differently because of a difference in mindsets or world-view (Niranjan et al., 2014). We represent these two levers in a 2 by 2 matrix to denote the typology with four ideal types of knowledge outsourcing decision making process as

Table 29.

Table 28 Winners and losers of the decision process

Firm Code	Winner	Influenced	Loser
HOSP	Head of Information Systems	CEO, Board	-
CPG1	Country Managers		Central Unit, centrally appointed to regional units
CPG2	Regional Managers	Top Management	Head of Finance
IRST	-	-	Top Management
CNGL	Head of HR	Divisional HR Heads	-
AUAN	Central Materials Manager	-	Head of Production
CHM1	Country Top Management	-	Head of Maintenance
CHM2	Head of Finance	Other Functional Heads	Head of Purchasing
DMFG	CEO	-	Head of Maintenance
PMFG	Facility Managers	-	Top Management
APRL	Functional Managers	-	Top Management

Table 29 Typology representation

		Mindset Exchange	
		Naïve	Involved
Information Exchange	Naïve	Unframed Data Exchange (UDX) Cases: CPG2, AUAN, CHEM1	Framed Data Exchange (FDX) Cases: HOSP, CNGL
	Involved	Data Manipulation (DMP) Cases: IRST, PMFG, APRL	Frame Manipulation (FMP) Cases: CPG1, CHM2, DMFG

We classify the data exchange as naïve when the initiating manager assumes that the objectives are aligned within the organization. In an involved exchange, the initiating

manager assumes that the managers could have different objectives and makes the data relevant to the different objectives (Cyert & March, 1963). Similarly, we classify the mindset exchange as naïve when the decision initiator assumes that all the managers have the same mindset. Alternatively, managers could assume a difference in mindsets and attempt to influence by changing the mindsets. We describe the four ideal types in detail below.

Unframed Data Exchange (UDX)

This typology represents extensive sharing of information to ensure that the relevant information to make the outsourcing decision is available to all the managers. Users of UDX believe that the pathway to influence is through extensive sharing of information. This suggests an implicit assumption that other managers have the same objective for outsourcing and share the same mindset. Managers who practice UDX spend substantial time in data collection and presentation activities and tend to provide numerical or analytical justifications for arguments. They try to have access to multiple sources of data and have expertise in data visualization techniques and analytical techniques.

For example, the Head of Finance in CPG2 suggested the outsourcing of purchasing transactions globally by extensive spreadsheet calculations. His replies to queries and concerns by regional units also use spreadsheets and analytical calculations. Similarly, the R1AUAN, the central materials manager instituted an objective survey to learn about other firms that had outsourced maintenance repairs and operating supplies (MRO) management. She countered the production manager by using information from

this survey. On similar lines, the top management at CHM1 created an expert group with technical specialists from Malaysia and the global manufacturing excellence function. The group focused on objective information to recommend the outsourcing of maintenance.

All three cases of UDX represent firms with a culture of reliance on systems and data to make decisions. For instance, CHM1 is a part of a large global group of companies that thrived on efficient data exchange between group companies. CPG2 has

Table 30 Unframed data exchange

Typology	Tactics	Antecedents	Consequences
UDX	Reference to multiple sources of data	Firms with extensive data oriented culture	When decision makers are aligned, leads to comprehensive evaluation, high perception of legitimacy, fast decision making and more comprehensive analysis
	Use of charts, graphs and tables	Technical expert decision initiator	
	Use of objective surveys	Availability and access to data	
	Reference to analytics		When decision makers are not aligned, the decision process can go astray
	Numerical justification to cost-benefit calculations		
	Use of technical experts		

an elaborate knowledge management system to receive and analyze global data. The decision initiators in all these cases are technical experts in their respective domains. For example, in AUAN the decision was initiated by top management and most of them were

highly skilled engineers. In CPG2, the finance head had initiated the decision and he was a highly qualified finance expert. The data orientation and the technical expertise of the decision initiator ensured that the decision process included high information exchange. When the assumption of mindset alignment is valid, outsourcing decisions made by UDX tend to generate high legitimacy for the decision, the initiator as well as the firm. Also, the decision evaluation tends to be moderately comprehensive. In the case of AUAN, the low growth of profitability had aligned the minds of senior management and functional managers to initiate major changes based on a clear framework. Hence the outsourcing decision process was as planned and AUAN outsourced MRO management. However, in CPG2, there was an inherent mindset difference between the central unit and the regions. The decision process in CPG2 meandered without a conclusion and was eventually shelved. Here the purchasing transactions were not outsourced. The details of UDX have been summarized in Table 30.

Data Manipulation (DMP)

Some decision initiators tend to restate and misrepresent data to make outsourcing seem highly favorable. Decision initiators using DMP seem to be convinced about the need for outsourcing and a relatively faster decision process. They have lower trust in the abilities of other managers to be able to make sound decisions. Managers who use DMP do not attempt to change the mindset of other managers, and they expect that the exaggerated decision related numbers (e.g. cost versus benefits, risks of not outsourcing) and subtle threats to facilitate the outsourcing decision.

The top management at IRST used false performance benchmarks to justify the need for outsourcing. Additionally, they also used consultants to make these false benchmarks seem credible. Similarly, in APRL, the management used customer mandate as an excuse to justify the outsourcing of IS operations. The actual report from the customers was not shared with the functional managers. In PMFG, the study team created to analyze the break down of machines did not have technical experts and did not have the technical ability to investigate. In IRST as well as APRL, the decision initiator indicated a subtle threat of job loss if the processes were not outsourced. In all these cases the information that was used to make the outsourcing decision was either not genuine or inadequate.

Decision initiators resorting to DMP are generally with firms that have a dominance of non-formal operating systems. So, in APRL, because of organic growth, most operational systems were informal. Even in PMFG, the substitution of MRO parts was done without detailed analysis based on requests from the production function. Also, the decision initiator tends to be a person of authority. In all three cases, the decision initiator is part of the top management. A key contextual feature associated with DMP is that all initiators felt the need for a fast decision process. APRL had been requested by customers to take quick actions on data security. Similarly, IRST was fast depleting its reserves and needed to outsource purchasing transactions to reduce the salary expenses. DMP tends to result in low legitimacy for the decision, the initiator as well as the firm. In APRL, the decision had to be shelved because of the lack of cooperation by the functional managers. In PMFG the decision created a conflict between the head office and the facilities. In IRST, this caused an overall deterioration of trust between the

functional managers and the top management. Further, the decision analysis was uncomprehensive and factors not directly related to outsourcing influenced the decision. In IRST outsourcing was suggested to reduce the cash outflow and in PMFG and APRL outsourcing was suggested to introduce formal systems. The summary of DMP has been shown in Table 31.

Table 31 Data manipulation

Typology	Tactics	Antecedents	Consequences
DMP	Use of doctored data	Firms with informal systems	Low legitimacy for the decision, initiator and firm
	Use of biased consultants	Decision initiator with a high level of authority	Lack of comprehensive outsourcing decision evaluation
	Use of authority	Lack of trust in other decision makers	
	Opaque decision process	Perceived need for a faster decision	
	Selective data sharing		
	Use of subtle threats		

Framed data exchange (FDX)

The decision maker using FDX recognizes that different managers can have different mindsets. Given this, managers are likely to create a different meaning from the same set of data (Weick et al., 2005). So, FDX involves changing the mindset of other managers. Managers with aligned mindsets are more likely to arrive at a legitimate and more comprehensively analyzed outsourcing decision as compared to all the three other types. However, FDX requires substantial effort by the decision initiator and the success of this depends on the credibility of the decision initiator with the organization.

The new head of HR at CNGL demonstrates this decision making process. In order to create alignment within the organization towards the outsourcing process, he recodes the data to make it more palatable to the individual divisional HR manager. He created customized scenarios of how outsourcing HR processes would solve problems in their division. He held multiple meetings with the division HR managers and invested considerable efforts in understanding their concerns. His overall effort was to build a consensus for the outsourcing decision. Similarly, R1HOSP recognized the concerns of the CEO as well as the board and she presented very different reports recommending outsourcing of datacenters to them.

Decisions like that of knowledge asset outsourcing cause a considerable change in the internal hierarchy and power balance within the organization and managers within the same firm could have different levels of gains or losses from the same decision. Given this, the lack of consensus between the managers should be expected. And, this lack of consensus can only be avoided if the units share a common identity. Bost HOSP and CNGL employees strongly identify with their firms. This makes it easier to change mindsets towards a shared organizational goal. Further, the decision initiator needs to have high credibility within this firm. R1HOSP was highly respected within HOSP and the head of HR at CNGL was new to the organization. This allowed both to be attributed with higher credibility. Lastly, since both R1HOSP and the head of HR were trying to run a participative approach, they were open to the final decision being different than what they had proposed. So, after created a common mindset, the head of HR had minimal involvement with the decision process.

Table 32 Framed data exchange

Typology	Tactics	Antecedents	Consequences
FDX	Recode data Higher engagement with other managers Show empathy Build consensus	Firms with strong organizational identity Decision initiator with a high level of credibility Flexible with the outcome of the decision process	High legitimacy for the decision, initiator and firm Comprehensive outsourcing decision evaluation

FDX tends to generate the highest level of credibility for the decision, decision initiator as well as the firm. In CNGL only two divisions expressed reservations with the outsourcing of HR and all the rest (more than ten) agreed for a joint review of the decision. At HOSP, the CEO considered the decision to be legitimate and supported R1HOSP in presenting the decision to the board for acceptance. Given this feeling of legitimacy, there is a comprehensive evaluation of the outsourcing decision. For instance, at HOSP, besides analyzing the outsourcing of datacenter, R1HOSP also explored the outsourcing of other IS functions based on the suggestion given by the board. Similarly in CNGL and detailed analysis allowed them to keep the campus recruitment process of one division outside the scope of outsourcing. Overall adoption of FDX is associated with the highest levels of legitimacy and comprehensiveness in evaluation among all four types. The summary of FDX has been presented in Table 32.

Framed manipulation (FMP)

Some outsourcing decisions involve a substantial change of power balance within the firm. These decisions are thus likely to create higher conflict. For such situations,

decision initiators with substantial resources could resort to FMP. Here, the initiator invests substantial efforts in subverting the mindset of other managers and make them more likely to support outsourcing. Along with the change of frames, data is also represented in a way that shows a higher benefit from outsourcing. Managers who use FMP accept the contentious nature of the outsourcing decision and attribute the contention to differences in mindsets as well as differences in data availability. These actions are best demonstrated on CPG1. Here, the decision initiators made senior level appointments at all the regional units of executives and managers who were likely to share the central unit's mindset. These new appointments had shown the required cost-driven mindset in their previous roles. In CHM2, the head of finance created a higher goal of organizational survival and drove alignment of mindsets. He presented detailed plans for the change and made the change seem manageable. At DMFG, the high credibility of the head of Maintenance was leveraged to make outsourcing of maintenance acceptable to the engineers and technicians. Overall, in all these cases, information and mindset changes were introduced to make the outsourcing decision seem legitimate and acceptable.

Such decisions need a high level of monetary resources and tend to take longer among all the types. Hence FMP is only used in situations that need a very level of acceptance among all decision makers. In CPG1, the outsourcing of supply chain planning systems was an ambitious project and it needed the willing cooperation of executives from multiple departments. In DMFG, maintenance was tightly integrated and highly respected. Hence, the consideration of outsourcing maintenance needed assistance from all employees at the manufacturing facility. All three organizations where the

decision initiator used FMP were bureaucratic organizations where the local (country level) identity was stronger than the global firm level identity. The decision initiator for FMP needs to be highly resourceful. In the three cases of FMP, all decision initiators were part of the top management and had access to resources.

Table 33 Frame Manipulation

Typology	Tactics	Antecedents	Consequences
FMP	Positioning people Creation of role models Reducing perception of cost to change Subtle reference to future strategic challenges Use of detailed plans	High perceived need for legitimacy High resource availability Outsourcing causing high level of change Bureaucratic organization	When mindsets align, high legitimacy to decision, user and firm If mindsets do not align, decisions can go astray

If the decision initiator is successful in manipulating the mindsets, the decision process would result in a high legitimacy and be able to make substantially complex outsourcing decisions. In the case of DFMG, they were able to outsource maintenance which was a tightly integrated function at the manufacturing facility. Similarly, CHM2, where purchasing had a very status, was able to deliberate and decide to outsource purchasing transactions. However, if the mindset changes are not as effective, the decision can go astray. In the case of CPG1, the massive project of supply chain planning had to be abandoned in favor of smaller pilots. The outsourcing project caused acrimony

between the central unit and the regions leading to loss of trust. In all the cases highlighted above, the comprehensiveness of decision analysis was moderate.

Closure

We show that the firm level decision is not necessarily a function of the economic variables (asset specific and core competence). Rather, the knowledge asset outsourcing decision emerges by complex interaction between decision makers. In this, we suggest the role of social interaction as a driver of strategic knowledge asset outsourcing decision making and raise a doubt on the role of theories such as TCE and RBT as firm level theories of knowledge asset outsourcing.

We also show that the strategic decision of knowledge asset outsourcing evokes considerable involvement from the functional managers. As compared to other strategic decisions, knowledge asset outsourcing decision is more contentious, complex, has very little precedence and influences future decisions. Given this, decision initiators always ensure that the process of outsourcing is considered legitimate by other managers in the firm. Also, we show that outsourcing decision processes have an explicit and implicit motive and that there are several deviations from the planned process.

Different managers of the firm may take varying approaches towards the outsourcing process. We focus on the decision initiator to show that initiators chose one among these four ideal types – unframed data exchange, data manipulation, framed data exchange and frame manipulation. We show that there are distinctly different antecedents and consequences to the decision processes. Here, we desist from using terminologies like rationality and politics. Rather, we frame the basis of the typology (information

exchange and mindset exchange) on the actual processes followed in practice. We hope this reduces the gap between knowledge outsourcing practice and knowledge outsourcing theory.

We adopt the Giddens framework (Giddens, 1984) to portray strategic outsourcing decision as an outcome of interaction between decision makers. By creating this social framework, we align the knowledge outsourcing research to the current research paradigm in organizational strategy and reduce the gap between knowledge outsourcing research and strategy research. Additionally, our typology provides means for other researchers to explain questions on knowledge outsourcing such as the decision typology to employ in different firm and decision contexts.

CHAPTER 5

DISCUSSION

We notice that KAO decisions are highlight problematic in that extant theory is not able to explain KAO decisions, and firms also do not seem to be satisfied with the KAO decisions that they make (Lacity et al., 2011). We show that this is because of the non-linear and two step process of KAO decision making. So, while individual solutions tend to be driven by theoretical considerations, the judgement of the theoretical variables can be biased by retrospective and prospective conditions. Also, the subsequent discussions between decision makers to arrive at a firm level decision tend to be constrained and non-comprehensive because discussions are driven by individual thought worlds. Discussions lead to ‘winners’ and ‘losers’ within the firm and the decision tends to reflect the thought worlds of the winners. The losers do not adequately contribute to the decision making and this leads to poor and non-comprehensive decision making. The biased understanding of decision variables deviates the decision away from the theoretical models, while the winner led discussions make the decision non-comprehensive.

In this dissertation, we address an important question of “how” the knowledge outsourcing question is made. Knowing the “how” is analogous to understanding the mechanism, and it is the understanding of the mechanism that can lead to claims of causality (Pettigrew, 1992). Studying merely the outcomes, as in studying what decision was made, may not be of value when the decision process is complex and multi-level like that in knowledge outsourcing. In such situations, the “what” decision may be influenced

by confounding variables and lead to limitations in using theories to explain the phenomenon, which, as we mention in the literature review, we have in outsourcing research.

In this way, we offer a socio-cognitive explanation of the strategic decision to outsource knowledge assets. We show that the decision maker can be driven by the affinity with the asset as well as the prospective influence of the outsourcing decision. So, while decision makers use theoretical frameworks like TCT and RBT to make individual solutions, their perception of decision variables like asset specificity and core-competency is cognitive. The subsequent firm level decision involves a socially driven discussion between these cognitive decision makers. Here, factors like reputation of the decision maker and firm culture can drive how decision makers with possibly competing cognitive frames exchange information. For example, high reputation managers tend to facilitate changing of cognitive frames while data oriented firm cultures tend to restrict comprehensiveness.

Since supply chains are formed by consistent outsourcing, we can thus claim a socio-cognitive basis to the formation of supply chains. So, supply chains are not formed merely by economic considerations, but by cognitive perceptions of economic variables the subsequent discussion between decision makers. The socio-cognitive theory of the formation of supply chains does not negate the influence of economic considerations but describes how cognition and social discussions drive the economic considerations.

The socio-cognitive theory offers the OSCM researchers an alternate mechanism to examine hitherto inconsistently explained strategic phenomena. For example, internal integration / alignment involves managers from different functions and possibly different

thought worlds. A socio-cognitive approach may be able to explain the lack of integration / alignment in firms. Similarly, sustainable supply chain decisions could be influenced by varying perceptions of decision makers. As a general idea, we propose that the socio-cognitive framework could influence all strategic OSCM decisions that involve decision makers from different functions or when the decisions have a different prospective influence on decision makers.

Our explanation offers the practitioners a glimpse into how solutions offered by individual managers may be biased and how subsequent discussions tend to be non-comprehensive. That is, the dissatisfaction with knowledge outsourcing decisions is a natural outcome of the decisions making environment within firms. Firms need to invest significantly more effort to ensure a comprehensive decision. Additionally, we make the managers aware that knowledge outsourcing decisions are not isolated but are influenced by the past strategic decisions and they influence future strategic decisions (Poppo, Zhou, & Ryu, 2008).

Theoretical contribution to Knowledge asset outsourcing

There is substantial research on outsourcing in OSCM are and there is also a mention of knowledge assets outsourcing (Ellram et al., 2008). There is disparate research on multiple topics that can be classified as knowledge asset outsourcing decisions (e.g. Brewer et al., 2013) In this dissertation we establish knowledge asset outsourcing as a distinct field of study. We use literature to claim that because of the tacit nature of knowledge, knowledge asset outsourcing decisions are driven by perceptions while physical asset outsourcing decisions are driven by explicit data. The role of

perception thus creates a situation where cognition has a substantial role in the decision making process.

We find many similarities between the knowledge asset outsourcing process and other strategic decision processes. For example, the multi-level and contentious nature of the strategic processes has been mentioned for the decisions of technology and entry into a new business line (Kaplan, 2008; Shrivastava & Grant, 1985). The common element is that decisions like that of knowledge asset outsourcing, technology decisions and new business line selection all represent strategic decisions that most firms would not have a precedent to. This novelty is likely to initiate independent sensemaking among the managers, thus leading to the contentious decision process.

Another similarity is that past events and prospective changes influence the decision process (Jarzabkowski et al., 2018). Managers seem to view strategic decisions as part of a long term game where the decision is driven to generate a favorable solution in the long term game rather than the current decision. So, in CHM2, the decision was driven by the implicit goal of reducing the powers of the head of purchasing. Both CPG1 and CPG2 initiated the outsourcing process because of the perception that the regional units were not in their control. Because of these implicit goals, the suitability of outsourcing was not comprehensively analyzed.

However, the knowledge outsourcing process does have some peculiar differences with other strategic decisions. Both the experiment and the case show a systematic subversion of the decision towards a decision that is favorable to the decision maker and not necessarily to the firm. This breakdown in the principal-agent norms has not been documented in other strategic decisions (Jensen & Meckling, 1976). Also, the systematic

attempt to manipulate the mindset is novel (FMP type). Probably, owing to the high stakes involved and the need for legitimacy in the outsourcing decision, top management consciously involved in an exercise to manipulate the mindset and thinking processes of functional decision makers.

Thought worlds

We show that the difference in perception on whether to outsourcing the knowledge asset within the firm is not random but has a definite basis – the affinity with the asset and prospective influence of outsourcing on self-interest. For instance, in the experiment, the participants that were likely to suffer a loss of self-interest, perceived the knowledge asset to be more core as compared to participants who faced a self-interest neutral situation. Similarly, participants with a stronger affinity to the asset perceived it to be more core as compared to participants with a lower affinity. This suggests the existence of thought worlds which are distinct cognitive frameworks used by managers to make the outsourcing decision (Niranjan et al., 2014).

The existence of thought worlds suggests that the firm level of analysis is that is predominantly adopted in outsourcing may obscure the phenomenon for knowledge assets. To learn about how firms make the knowledge outsourcing decisions, or to test the theories in action, researchers need a more within firm level of analysis. As we present, knowledge outsourcing decision is more about the contention between different frames of different thought worlds than about a structured and analytical approach (Kaplan, 2008). A within firm level of analysis that can observe these frames and their contention would thus deliver a more consistent explanation than studies with a firm level of analysis.

We wish to clarify that the thought worlds do not influence all decision variables. In our experiment, while the thought world influenced the perception of core competency, it did not influence the perception of asset specificity. We believe this difference of perception could be because of the existence and prevalence of distinct and uniform frameworks for core competency and an absence of such frameworks for asset specificity (Cabantous & Gond, 2011). Here, we suggest that theories that have clear decision making frameworks are likely to be more influenced by thought worlds than theories with unclear frameworks.

Typology

We base the typology on the idea that knowledge asset outsourcing decisions need a comprehensive evaluation by cognitively different decision makers. That is, the decision makers should willingly participate and contribute theory understanding to the decision making process. And, the contribution of these decision makers is dependent on their perception of the legitimacy of the decision process (Nielsen & Rao, 1987). In this way, the performance of the decision process is associated with the perception of legitimacy.

The perception of legitimacy is driven by the (dis) similarity of cognitive frames or mindsets between decision makers. A similar mindset means that managers would use similar information and would have similar objectives from the decision making process. However, a dis-similar mindset would mean that decision makers would use different kinds of information or that they would have different objectives from the outsourcing decision. For example, the dissimilar mindset could lead to a difference in perception of the core competence of the knowledge asset. It could also lead to one set of decision

makers prioritizing the cost impact of outsourcing while another set prioritizing the performance impact of the outsourcing decision.

Based on this, in UDX, firms that have decision makers with uniform mindsets are likely to see a comprehensive decision evaluation. However, firms with non-uniform decision makers are likely to invoke constrained analysis with UDX. Similarly, with DMP, the decision initiator seeks to mitigate the influence of the difference of mindset by offering extreme reasons to make the outsourcing decision. If the data manipulation is not noticed by other decision makers, the process is likely to be comprehensive, Else, the process will have a low level of legitimacy and also negatively influence all future strategic initiatives. Similarly, for FMP, if the process will have high legitimacy and high comprehensiveness if the frame manipulation is successful. However, when the frame manipulation is not successful, the process would be highly contentious and non-comprehensive. Lastly, for FDX, the high credibility of the decision initiator would lead to high legitimacy and high comprehensiveness.

General theoretical contribution

There has been a debate on the utility of TCE and RBT for knowledge asset outsourcing decisions (Poppo & Zenger, 1998). Here, we comprehensively show that for knowledge asset outsourcing decisions, managers do use asset specificity (TCE) and core competency (RBT) considerations. That is, when they perceive high asset specificity, they are less likely to outsource. And, when they perceive that the knowledge asset is a core competency, they are less likely to outsource. However, a key part here is that there is a high variance in the perception of asset specificity and core competency among

participants. While we are not able to trace the reason for the variance in asset specificity with the data we capture in the experiment, we identify that the variance in core competency is caused by the self-interest manipulation. TCE and RBT implicitly suggest that asset specificity and core competency are objective firm level variables. In this experiment, we show that they are perceptual individual level variables. So, TCE and RBT may be valid as theories on how managers generate their solutions, however, TCE and RBT might not be valid as firm level theories on how firms make the outsourcing decision.

Even at the individual level, we make a constrained claim that managers use TCE and RBT to make decisions. We do not have information to claim if the decisions are beneficial to the firm. Moreover, as we see in the typology, the firm level decisions emerge because of interactions between managers. So, if we proxy future performance with the comprehensiveness of analysis, we can see that FDX leads to a comprehensive analysis possibly leading to a successful decision (Forbes, 2007). While, since UDX leads to a low level of comprehensive analysis, the eventual decision might not be successful. So, the performance of the decision is based on the quality of the interaction and not the perception of TCE and RBT variables.

Here we wish to draw attention to the role of interactions in decision making (Franke & Foerstl, 2020). Since most OSCM strategic decisions are taken by cross functional teams, a team level study on the interaction between team members would have tremendous value (Foerstl et al., 2013). Perhaps, the next generation of valuable inputs in OSCM could come from considering these interactions through theories of teams or sociology.

Method Contribution

We attempt to design both the experiment and the case as per the current method recommendations and have been conservative in our methods of analysis to ensure that we limit all kinds of bias. So, Table 1 in the experiment and Table 17, Table 18, Table 19 and Table 20 in the case detail the steps taken by us to ensure the validity of the experiment and the trustworthiness of the case study.

The four notable method contributions for the experiment include (1) use of indirect method, (2) selective use of incentives, (3) use of invariance analysis and (4) consideration of non-normality of data. First, As we have mentioned in the method section on page 43, the indirect projective method, where ask the participant to take a decision on behalf of someone else, is very useful in situations that could influence socially desirable responses (Sherwood, 1981). Second, we have been prudent in the need for and effect of incentives. So, we use the incentives for the recruitment of student volunteers only. Since the incentive would be a small part of the income of managerial participants, offering incentives could reduce their participation (Read, 2005).

Third, the use of invariance measurement allows us to combine the student and managerial data. We follow the exact steps mentioned by Steenkamp and Baumgartner (1998) to test for and accommodate the variance between the students and managers. As we can see in the results, the students and the managers have invariant actions in the direct effect, but their perception of core competence is at variance. Here, it could be that the self-interest effect is heightened when the participant has actually worked. This result adds weight to the recommendation that student respondents can be used in experiments if the response does not depend on the respondent being employed (Moritz et al., 2013).

Fourth, we have been very conscious of the distribution of our data in conducting the analysis. So, our dependent variables of TA and SI are both dichotomous and thus non-normal. All the surveyed responses including that for AS, CC and proka are all non-normal. So, we use WLSMV estimation for the SEM (Beaujean, 2014). Also, all the tests before the SEM are those that can accommodate non-normal data. We feel that such active consideration of non-normality is essential to get valid responses. Per se, it is possible to use robust standard errors for times of non-normal data. However, we feel that since specific methods are available for non-normal data, we should prefer those methods. Specifically, DWLS (Diagonally weighted least squares) based methods (like WLSMV) provide more accurate loadings for dichotomous and non-normal data (Li, 2016).

Managerial Contribution

Since knowledge is distributed in different functions within the organization, it is essential that all the functional managers support a comprehensive evaluation of the decision process (Nonaka, 1994). Firms recognize the importance of such comprehensive evaluation and do make an effort to ensure that decision makers perceive the process to be legitimate and thus support a comprehensive evaluation. Thus, none of the knowledge outsourcing decisions were a top down order and were rather collaborative. However, in spite of this recognition, and the effort to make the process comprehensive, we see that in most cases firms were not able to induce all managers to willingly contribute towards the decision process.

We show that the lack of comprehensiveness has two reasons – (1) The different cognitive frameworks or thought worlds of the decision makers and (2) the nature of the firm level decision process. Because of these two reasons, the lack of comprehensiveness is a natural outcome. Cognitively different functional decision makers may perceive the need to outsource and the influence of outsourcing on key decision variables very differently.

Individual decision makers

We show that decision makers may perceive the core competency of the knowledge asset very differently. There was also a difference in the perception of asset specificity of the knowledge asset. Thus, it might be preferable for firms to investigate and clarify de facto understanding of the decision variables associated with outsourcing of the knowledge asset. This de facto understanding must be effectively communicated with the decision makers. Towards this, we suggest a separate discussion to evaluate the de facto understanding. For example, firms exploring the outsourcing of purchasing transactions could discuss and confirm the core competence of purchasing transactions prior to evaluating whether to outsourcing purchasing transactions. A clear and common understanding of decision variables by all decision makers is likely to reduce the implicit effect of cognitive bias.

To mitigate the explicit influence of self-interest on decision making, decision makers who face a substantial negative influence from the outsourcing decision should have a reduced role in making the decision. As the experiment shows, self-interested decision makers are likely to subvert the decision to suit their interest. Hence, such decision makers could be used to evaluate and create a common understanding of the

decision variables but should not be involved in the group level decision on whether to outsource the knowledge asset.

Group decision making

The process used to make the decision is influenced by the firm culture as well as dispositions of the decision maker initiating the decision. For example, data driven firms and technically expert decision makers are likely to use UDX for decision making. Thus, we suggest that the adoption of a decision process is an automatic outcome of firm culture and individual disposition rather than a conscious choice. And, since the adoption is an automatic outcome, the perception of legitimacy and the comprehensive evaluation are also automatic consequences. So, we suggest that in spite of its importance, the knowledge asset outsourcing decision has a pre-determined outcome.

We suggest that firms initiate some discontinuity to get control of the process. That is, firms with a rigid data-oriented culture might consider using informal decision making groups. Or, firms with informal culture could consider evolving a more formal decision making environment for the knowledge asset outsourcing decision. Also, we advice against the involvement of the interested decision maker in the decision process. Rather, we recommend that firms anoint a non-interested manager as the leader of the decision making process.

Lastly, a key observation in the cases was that decision initiators indulge in the process to create a chimera of legitimacy and drive the decision towards their individual intention. That is, the decision initiators already had the outcome of the decision in their minds when they were leading the decision process. Also, in most cases, the initiators had a secondary non-economic reason to initiate outsourcing.

To mitigate the impact of such decision initiator influence we suggest separation of roles of decision initiator and decision shepherd. Here, the role of the decision initiator must be restricted to offering the recommendation and maybe to suggest the initial analysis. The decision process post this must be led by a non-interested shepherd. Introducing this shepherd might cause the decision process to generate very different solutions than what was originally envisaged by the initiator, but the solution is likely to be more comprehensive.

CHAPTER 6

CONCLUSION

Overview

In this dissertation, we show that the process of outsourcing of knowledge assets is novel, complex and multi-level like all other strategic process decisions. However, because of the cognitive difference between the decision makers, the knowledge asset outsourcing decision process becomes very contentious. This contention could lead to wrong decisions with serious consequences. Hence the process needs to be researched and understood.

In Part I, we show that individual decision makers offer biased solutions because of self-interest and task affinity. The effect of self-interest is dual – a direct effect and an indirect effect through core competence. The direct and indirect effects inform that decision makers may take outsourcing decisions that support their self-interest. Additionally, we confirm that decision makers use the framework of transaction cost economics and resource-based theory to make the knowledge asset outsourcing decision.

In part II, we show the contentious nature of the decision process when multiple decision makers compete to influence each other and make their solution as the firm decision. In this, we frame a typology based on the data and mindset transferred internally within the firm. We label the typology as unframed data exchange, framed data exchange, data manipulation and frame manipulation. We show that each of these ideal types has different antecedents that are influenced by the type of firm and individual characteristics. The types also have different consequences in terms of the

comprehensiveness of the decision analysis and perception of the legitimacy of the decision process.

Limitations

Based on an extensive review of strategic decisions we used the two-step approach for observing and analyzing the knowledge asset outsourcing process. While the two-step process delivers results that can explain the theoretical deviations in knowledge asset outsourcing decisions, this approach also limits our view. It is possible that the outsourcing process is a three-step process, and given our method, we would not be able to recognize that. However, since the two-step approach generates results that were previously unexplained, we do not think that the two-step approach suggests wrong results.

In the experiment, we are not able to identify the reason for the variance in asset specificity. This could be a lacuna in the experiment design or the failure to include some confounding variable that is drives this effect. The experiments were done by the participants without supervision and control. This is reflected in the high variance in times taken by the respondents to complete the experiment. Also, though we had instructed them to not talk about the experiment, it is possible that at least the student group discussed and talked about their approach before taking the survey.

We have conducted the case study as per the suggestions of Charmaz (2000) and Glasser and Strauss (1967). We have also tried to include multiple aspects to make our research trustworthy (Guba, 1981). However, we still have a few limitations. The most important limitation is that the cases are built based on post hoc views expressed by the decision

maker. Though we have used multiple sources of data to confirm the respondents' view, the respondents would surely have offered a sanitized and post hoc justified view. Second, the coding and analysis has been done by one author only. This could have induced the author's bias into the analysis. Though the author provides a reflexive analysis and has shared the results regularly with the advisor, the influence of personal bias cannot be ruled out.

Future research

In the experiment, we tested for the influence of task affinity and self-interest bias on the knowledge asset outsourcing decision. We selected these two factors since they were the most prominent in the literature review. However, since the variation of asset specificity is not explained, it suggests the existence of some other confounding variable that we did not capture. Future researchers can attempt to use other variables to try and assess what drives the variance in asset specificity.

In the case, we construct a typology and define the activities associated with each of the ideal types, the antecedents and the consequences. The immediate next step should be the creation of an empirical scale to identify these ideal types. Post this identification, the typology lends itself to numerous research projects that test a contingency based approach for these types to some measure of performance (Doty & Glick, 1994). We also can imagine agent based simulation models where multiple agents within the firm interact to form a firm level decision.

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APPENDIX A
VIGNETTE TEXT

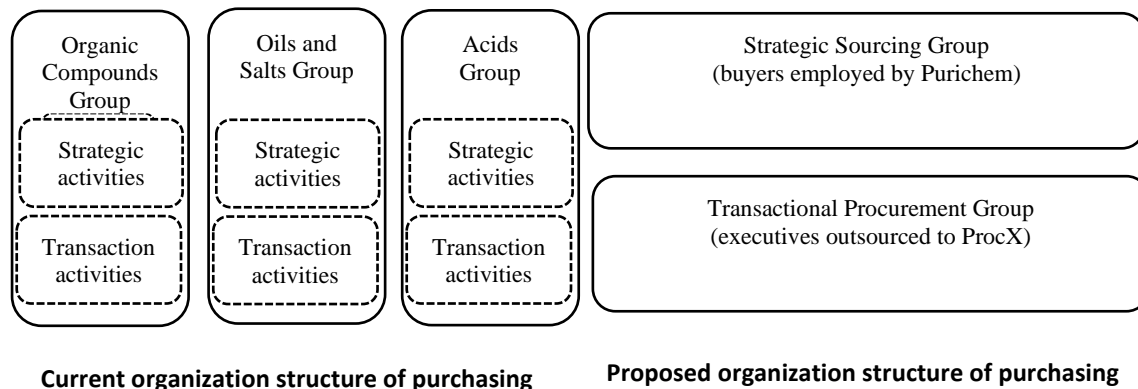
Outsourcing decision making

Ramesh is the head of purchasing (head of finance) at Purichem, a manufacturer of specialty chemicals. Purichem has an annual revenue of approximately Rs. 20 billion and manufactures a diverse range of chemicals for industries like food, agribusiness, cosmetics, textiles, etc. The chemicals are produced in state of the art manufacturing facilities in Roha, Maharashtra and Vapi, Gujarat. Specialty chemicals was a high margin industry, but competition from Chinese and Indian companies has made existing players sensitive to costs. John's role involves managing the procurement of all raw materials, intermediaries, maintenance supplies and even capital items. He reports to the Vice President – Commercial, who in turn reports to the CEO. The case presented below is regarding on outsourcing proposal that the CEO wants Ramesh's recommendation on.

ProcX, a supplier of purchasing outsourcing services has submitted a proposal to Purichem's CEO to consider outsourcing all transactional activities in purchasing. As per the proposal, the procurement department will be restructured into two horizontal segments based on the nature of the activity - strategic sourcing and transactional procurement. Strategic sourcing will include negotiations, supplier selection, supplier development and contracting. Transactional procurement would include floating of request for proposal (RFP), issue of purchase orders, scheduling, follow-up, accounts payable and supplier compliance monitoring. Post outsourcing, both the strategic sourcing and ProcX will report to Ramesh. (As per the proposal, Ramesh will head the newly formed strategic purchasing function, while ProcX will report to the Operations Excellence function.)

Currently, at Purichem, purchasing is vertically segregated and buyers are responsible for all strategic as well as transactional activities for specific product categories. For example, the buying team associated with organic compounds is involved with all strategic and transactional activities for purchasing only organic compounds. This approach has allowed buyers to develop a high level of expertise in one product category. The product category based vertical segregation in purchasing fits the current buying practices of Purichem.

The market for outsourced procurement services is dispersed and 8 service providers account for 75% of the market. ProcX is one of the leading suppliers in this market. They claim to have considerable expertise in transactional activities and mention that post outsourcing, transaction error rates would be substantially reduced. Additionally, they suggest that such outsourcing can reduce staffing costs in the purchasing department by 35%. They have submitted a list of satisfied clients from multiple industries to validate their claims. Further, they assert that outsourcing will also allow buyers in Purichem to stay focused on strategic sourcing. This way, the buyers can spend more time on high value interactions with suppliers and avoid the complexity of routine operational activities. ProcX will use its proprietary software and promise high data security as well as seamless integration with Purichem's information systems.



One group of executives within Purichem is skeptical about outsourcing transactional purchasing. They believe that transactions are an opportunity to interact with the suppliers and learn more about the supply market. They assert that the information gained from routine transactions can help the firm design better purchasing strategies. Further, they also add that continuous interactions through transactions help in building stronger supplier relations. In addition, they cite the danger of permanent dependence on outside suppliers because of reliance on ProcX's information systems. They mentioned cases where outsourcing had led to unforeseen costs emerging later.

The skeptics also refer to the multiple and possibly risky changes in the organization structure, buyer skills, and supplier communication. The product category based vertical segregation will have to be replaced by an activity type based horizontal structure. For one, the change of structure could mean that Purichem could never go back to the original structure that had served them well over the years. Second, the buyers will also have to learn to focus on multiple product categories. The suppliers will have to be informed of this change and they will have to learn to work with two different agents – with Purichem buyers for getting the order and other strategic activities and with the ProcX employees for all other transactional activities. All these changes could prove to be expensive and could require substantial time to be effective. Also, they suggest that purchasing transaction error rates could be improved internally without outsourcing.

The other group is highly supportive of outsourcing. They counter that all supply market intelligence can be easily obtained by ProcX executives and transferred to the Purichem strategic sourcing team. They also claim that existing buyers still have direct access to suppliers during contracting and negotiations and this can be used to collect market data. They assert that supplier expertise, ability to focus on core and the cost saving are far too important. They dismiss the risks of change or organization structure, buyer skills, and supplier communication as exaggerated. Since there were multiple suppliers of outsourced services, this group did not feel that using ProcX's information systems would create dependence on suppliers.

The CEO has asked for Ramesh's recommendation if the outsourcing of transactional procurement for raw materials is feasible. John has a good understanding of the concerns of both the groups at Purichem and knows that apprehensions expressed by the groups may not be accurate. (He is also aware that outsourcing purchasing transactions could reduce his job role and his powers within Purichem) He realizes that he neither has detailed data nor the time to validate the concerns. However, he has more than 15 years of experience in his role and based on that he feels reasonably confident in offering his recommendation to the CEO.

APPENDIX B
INTERVIEW PROTOCOL

1. Introduction of researchers
2. Introduction of topic of research
3. (Re)Confirm eligibility: Have you been part of a decision making for outsourcing of a knowledge asset?
4. Mention confidentiality
5. Explain interview format and mention tentative duration
6. Provide information to contact later for clarifications and questions
7. Ask participants if they have questions

Start Recording

8. Understand the decision making context
 - a. What exactly was proposed to be outsourced?
 - b. What was the reason for this proposal?
 - c. Who initiated the proposal?
9. Assessment of individual mindset
 - a. What did you feel about the decision?
 - b. Did you support the decision initially?
 - c. Why?
10. Cognitive heterogeneity
 - a. How did others view the decision?
 - b. Did they support the decision initially?
 - c. Why?
11. Group processes
 - a. What did you do to convince others?
 - b. Were you able to convince others? Who? How?
 - c. What did others do to convince you?
 - d. Did you learn more about the decision in interacting with others?
 - e. How did your views change?
12. Organizational culture
 - a. Did you express your views freely during the discussion about the decision?
 - b. Why?
 - c. Is it considered okay to express views different from the majority in your firms?
 - d. Was there pressure to reach a decision quickly?
13. General questions
 - a. How was your role in this decision process viewed within your firm?
 - b. How did the decision change your position of influence with the firm?
 - c. Knowing what happened, what would you have done differently as of today?
14. Conclusion and expression of gratitude

End Recording.

APPENDIX C
THICK DESCRIPTION

In this section, we describe each of the 11 decision opportunities in 11 different organizations. We explain the nature of the knowledge task considered to be outsourced, the latent conditions in the organization and the trigger that led to outsourcing being considered. We also profile the respondents and describe the decision making process of the “decision competition victor” from the perspective of the respondents.

HOSP

This independent hospital in the Southern United States had to decide on outsourcing the data center and the data security systems. The pressures to reduce costs in the healthcare domain have made data center and overall information systems (IS) outsourcing attractive and the outsourcing market is estimated to be worth \$21.2 billion in North America alone (Donovan, 2018). Datacenter outsourcing companies claim to offer lower operations cost, higher system uptime, better support and access to the latest technology¹⁰. However, the healthcare industry perceives a high risk of data theft from outsourced centers. For instance, in 2018, more than 1.5 million patient records were compromised (Powell, 2019).

A service provider had been interacting with the Head of Information Systems (R1HOSP) to promote outsourcing opportunities. However, R1HOSP was keen to keep the datacenters in-house because of data security concerns. HOSP data center suffered a service outage on Friday evening. R1HOSP and the sparse IS staff available on weekends could not address the issue. Using the (free) advice from the service provider, R1HOSP was able to resolve the problems by Saturday morning. This convinced R1HOSP about

¹⁰ <https://www.outsource2india.com/software/articles/pros-cons-data-center-outsourcing.asp#>

the lack of technical expertise within the department and the need to outsource the datacenter. To ensure a single point of responsibility, the project expanded to outsource datacenter and data security systems as a bundle to the same service provider.

RIHOSP: The Head of IS had 18 years of work experience, of which the last 14 years were in Information Systems. She¹¹ was in the leadership roles for 4 years. She was highly qualified and had a strong industry reputation for her technical skills¹². The reliable performance of IS within HOSP had earned R1HOSP a high status even within the organization. She was confident about keeping the system technically updated and being able to deliver uninterrupted service.

The datacenter outage dented R1HOSP's confidence in being able to deliver uninterrupted service. She felt that such outages could occur in the future and that would seriously dent her reputation within HOSP. This was the trigger for her to drive the outsourcing decision within HOSP. R1HOSP designed a proposal that highlighted the future vision for the IS function and attached spreadsheets that showed how outsourcing the datacenter would support this future vision and the cost advantage of outsourcing.

She presented the report to the CEO and the management team. The management team had high confidence in R1HOSP and accepted the report. Based on these interactions she helped the CEO frame a concise proposal for the board. The board requested a detailed proposal suggesting evaluation of all other IS functions including billing, pharmacy, scheduling, etc. She was provided by the board with benchmarking reports that favored complete IS outsourcing for healthcare. R1HOSP was a strong

¹¹ To avoid identification, all respondents have been referred to as females and all non-respondent actors have been referred to as males.

¹² R1HOSP is often invited to speak at leading conferences on healthcare IS

proponent of not outsourcing unless absolutely necessary. She made a counter proposal highlighting deficiencies in the benchmarking report and explained how comprehensive outsourcing would not be good for HOSP.

“A few board members were also on the board of other health care companies and it was possible that those companies had outsourced substantial part of their IS functions. My second proposal highlighted how we were different.”

She engaged with the board for more than six months to ensure that the outsourcing was restricted to the data center and data security processes. In these six months, she had to interact with several suppliers and consultants invited by the board to present on the possibilities of outsourcing other parts of IS. For every such meeting, R1HOSP prepared a detailed note highlighting the assumptions and limitations of the presentations. Eventually, the board agreed to R1HOSP's proposal. The CEO and the management team strongly supported R1HOSP in the interaction with the board.

CPGI

This organization was formed by the merger of two leading global consumer packaged goods companies. The merger was motivated by private venture funds that owned one of the companies. The venture funds appointed the CEO of the merged firm and tasked him with the drive to substantially reduce costs. The plan to centralize and outsource supply chain planning systems emerged from this drive. The organization had multiple independent units operating globally. The centralized and outsourced systems

were expected to lead to a substantial reduction of inventory, human resource costs and other operating costs.

Supply chain planning outsourcing is the outsourcing of all non-physical asset based planning tasks. So, an external partner would take over demand management, production planning and supply planning. The organizations retain control of tasks like promotion planning and customer communication, in-plant logistics, supplier selection and supplier development. Such outsourcing allows one partner firm to have an end to end visibility and lead to substantial benefits. However, supply chain planning outsourcing also has a high risk of alienating suppliers and creating additional bottlenecks for internal operations¹³.

Outsourcing global supply chain planning systems was an ambitious task since the central unit had very little interaction and control over the regional units. The data and operating systems were localized and the central unit had limited understanding of the actual local processes. Thus, even though the central unit managers were positive about the benefits of outsourcing, they were apprehensive about their ability to implement it. Also, the central unit managers needed the willing participation of the regional units to learn about the local processes and also ensure continued co-operation post outsourcing.

The central unit at CPG1 designed a plan to implement the decision process. They made senior level regional appointments from managers in the central unit. These managers were sympathetic to the central unit's agenda and had previous experience in working with a cost driven venture funding owned organizations. The newly appointed managers were not explicitly informed about the outsourcing project, but the central unit

¹³ <https://www.gep.com/supply-chain-services>

hoped to favorably drive the outsourcing decision. In this case, the decision to outsource was already made and the central unit was using the decision process as a façade to ensure implementation.

The central unit deputed consultants to the regions to learn about local supply chain planning systems. The stated objective was to learn from global experiences. After this, senior regional managers were invited to a conference to design the organization for the future. The idea of supply chain planning outsourcing was first implicitly conveyed in this conference. The managers were to discuss the future vision with other local managers and suggest an implementation plan. Through the centrally appointed local managers, the central unit steered the discussion towards the centralization and outsourcing of supply chain planning functions.

The discussions were fructuous until the central unit set up teams to study the possibility of outsourcing. The central unit appointed local managers offered support to the study teams, but the rank and file desisted from cooperation. In spite of the substantial resource deployment by the central unit, CPG1 was not able to secure cooperation towards the decision. Two markets agreed to allow demand management outsourcing (North American and North Africa) and a plan was set up to expand the outsourcing based on the experiments in the two markets.

RICPG1: She was an industry veteran with 25 years of experience in multiple supply chain roles in three different organizations. She headed the Operations Excellence function at CPG1. She had risen through the ranks and classifies herself as a survivor. Her key skill was her ability to drive continuous process improvements in her organizations by blending principles of lean, theory of constraints and six sigma.

“My job has three components – deciding what to change, getting the approval to change it and working towards actually making that change”

R1CPG1 became cognizant about the possibility of outsourcing when the consultants from the central unit started inquiring about work methods, systems and procedures. She deemed it fit to align with the centrally appointed local manager in this and extended complete support to all requests. She was appointed the local guide for the study team and she tried to assist them in getting all the information required.

“If the central unit has decided, they will achieve it. So, it is best that I support them and find something for myself.”

CPG2

CPG2 is a leading manufacturer of confectioneries headquartered in the United States. The firm has decentralized global operations where product development and general guidelines on packaging and customer communication are centrally managed. All other decisions are taken by the regions. Each region is treated as an independent profit center and regional heads operate like independent CEOs. While the regions and the central unit had very few interactions, CPG2 had an extensive system of knowledge management where the operational data was centrally stored and analysed.

The central unit wanted to exert control over the regional units but was unable to. The regional managers were wary over any central intervention and were proactive in what they termed as *“protecting their turf.”* The new finance

head was an expert in corporate finance and valuing change management projects. He had implemented outsourcing of purchasing transactions in his previous position and suggested that as a measure to assert some control over the central unit and also reduce costs globally.

Outsourcing purchasing transactions involves outsourcing all steps from the generation of the purchase order to the final supplier payment. The organization decides the supplier and negotiates the terms. The outsourcing service provider takes up all the process post this. Since the transactions are processes from countries with a lower wage structure, there is a substantial saving of costs. Also, service providers claim increase accuracy of transactions. However, there have been counter claims that outsourcing purchasing reduces the interaction with suppliers and leads to other indirect costs (Fernandez & Kekale, 2007).

The finance head invited purchasing related performance parameters from all regions. Based on the numbers provided, he calculated the possible cost reduction if purchasing transactions were outsourced. He compiled these calculations into multiple spreadsheets and shared these with the regional heads. He wanted to initiate a discussion on the possibility of outsourcing purchasing transactions. His spreadsheets were very detailed and they suggested a substantial cost reduction with purchasing outsourcing.

A few regional heads ignored the communication from the finance head while a few responded with corrections and alternate calculations. The finance head insisted on cooperation and leveraged the CEO's office to force a response. He painfully analyzed all the calculations sent to him by the regional heads and replied to them with additional calculations. This interaction continued for more than 14 months. Later, through a private

meeting with the CEO, a few regional heads had the finance head's powers reallocated and the outsourcing project was shelved.

R1CPG2: She had her master's in business from a leading business school and CPG2 had been her first and only job for the last 9 years. At CPG2, she was the sales and operations plan process owner and she worked with purchasing, sales, marketing and finance to try and balance demand and supply. She attributed her success in the job to sharing a good rapport with the professionals from different functions more than her technical skills of forecasting.

R1CPG2 was keenly involved with confirming the finance head's spreadsheet calculations and framing the region's reply to them. She felt that his basis for cost calculations was wrong since he did not consider that buyers in the region did multiple tasks. So, it was not fair to apportion a major portion of their salaries to purchasing transactions. The benefits from error reductions would not accrue to the region since their accuracy was already above the threshold. Also, the costs of monitoring the outsourcing service provider were underreported. She was clear that outsourcing might slightly reduce the initial costs, but there could be substantial long term costs.

R2CGP2: She was the category manager for sugars and other sweetening additives. This was by large the largest purchasing category for CPG2. She had a very good understanding of the price behavior of her category and had established strong relations with sugar factories as well as brokers. She has been involved with this category for almost ten years now.

She was the regional head's key resource in generating strategies to counter the finance head. When they received the first proposal from the central unit, they had

decided to not support the venture. Using elementary calculations that the cost saving if any would be negligible. And, accepting one proposal from the central unit could amount to further digression of powers from the region to the center. R2CPG2 agreed with her regional head that their success was because of their independence and this project could undermine this reason for success. She helped R1CPG1 in constructing scenarios and examining cost heads that would be disadvantaged by outsourcing purchasing transactions. She was also involved in setting up the informal network of regional heads. Through this network, the regional heads met the CEO and managed to have the powers of the finance head reallocated and ensure that the outsourcing project was shelved.

IRST

IRST was a leading company in metals manufacturing in India. They have a rich history and a strong reputation in the industry. IRST was considered to be a very nimble player and the firm was first to introduce many coated metal products in the Indian industry. They were also pioneers in adapting new technology tools for efficient production. The top management of IRST was known to have excellent relations with the central government.

The overcapacity in the metal industry had substantially dented IRST's financial performance. They were consistently operating at an average utilization of 60%. Though their Indian market was protected because of anti dumping duties, their export market had collapsed. IRST had substantially depleted its reserves and the top management was desperately exploring avenues to reduce cost. Outsourcing of purchasing transactions was considered in this scenario because of random solicitation from a service provider. The

opportunity to convert the fixed cost of purchasing operations to variable was very tempting. The supplier had offered to defer initial payments and this would substantially reduce the cash outflow for IRST.

Since the top management of IRST wanted to make a decision quickly, they invited consultants from a leading firm to help them with calculating the performance of their purchasing department and suggest if outsourcing would benefit. Under instructions from the top management, the consultants peddled manipulated benchmarks figures for ideal purchasing performance. The consultants used these biased benchmarks to suggest the outsourcing of purchasing transactions.

R1IRST: She had spent more than ten years from her 15 year career with IRST in purchasing. She was currently the purchasing manager and headed the raw material purchase department. Over time she had developed a reputation as being efficient and “*company oriented*”. She had developed strong ties with the top management, and R1IRST and top management would frequently have direct conversations bypassing IRST’s supervisor.

This manipulation was detected by R1IRST when she accessed the original documents for benchmarks. She confronted the consultants who pointed to top management instructions. The purchasing manager then discussed this with top management and managed to limit outsourcing. Instead of the complete outsourcing that was proposed, R1IRST could ensure that 30% of the tasks were still kept inhouse.

“I understand that we are in a bad financial conditions and that the reduction of manpower could provide temporary support. However

the wholesale indiscriminate approach was not right. Because I detected the cheating, I could at least make the outsourcing more sensible”

CNGL

CNGL was a leading business conglomerate in India with operations in a diverse group of businesses. The group had consistently good financial performance in most of the business divisions. Though the divisions were financially separate they shared strong common group identity. The group had very low turnover rates and was reputed to be employee oriented.

There was a simmering conflict between the group and the division level human resources (HR) department. The divisions maintained extreme opaqueness to internal data. The salary structures were dissimilar and in many cases unknown to the group HR. The recruitment and onboarding processes for new employees were different. Similarly, the divisions had independent contracts for insurance, training and all other HR processes. The group HR felt that centralizing the function was necessary to project a common group image while the divisions believed that decentralized operations were necessary flexibility.

HR outsourcing involves using a supplier for recruitment, onboarding, training, appraisal and also the traditional functions of payroll and benefits administration. Outsourcing suppliers promise a ‘single window’ approach and substantially reduced operations cost. They also claim to update to latest techniques and technologies as soon as they are available. Additionally, they can pass on the reduced cost of their partnership

with training providers, insurance companies, etc. Managing compliance requirements and data security were considered key risks¹⁴.

The possibility of outsourcing HR was introduced by the new group HR head. He shared information about multiple service providers with the division heads with additional information on how outsourcing would solve many of their HR related concerns. The letters were customized for each division and highlighted the specific problems in that division. For example, a letter to one division highlighted a severance litigation that could have been avoided. The letter also mentioned plans to accommodate prospectively redundant employees in alternate roles.

The group HR head simultaneously initiated the decision on whether to outsource and who to outsource to. While he projected his keenness to outsource and he left the final decision with the division heads and had a demonstrated a complete hands off approach to the supplier selection decision. He made personal visits to each of the divisions and made the suppliers present to every individual division.

Two divisions expressed aversion to HR outsourcing and presented data on the benefits of the decentralized approach. One of the divisions had a considerably higher reputation in campus recruitments and the division did not want to lose this independence. The group HR head offered to allow this group independent campus recruitment and thus isolated only one division as opposing the project. He let the division heads independently design the process to consider outsourcing and supplier

¹⁴ <https://www.shrm.org/resourcesandtools/tools-and-samples/toolkits/pages/outsourcingthehrfunction.aspx>

selection. Eventually, the decision to outsource the HR function and select the vendor was accomplished in less than 12 months.

R1CNGL: She had joined the group as a junior clerk and had risen to the position of an HR manager with the central group. She had only worked for CNGL in her 23 years or career. She considered herself to be immensely loyal to the company and was a major driver of the centralization initiative prior to the appointment of the new HR head.

One of the biggest changes in the outsourcing outreach was that the group HR head had involved the division heads and had completely ignored the division HR. Additionally, he spent considerable time understanding the HR problems at the divisions and successfully projected outsourcing as a solution. He had also developed a personal rapport with most of the division heads. In the annual business review meeting, the group HR head managed to get the CEO to mention and ask about the progress of the HR outsourcing project. This conveyed the sense that the project had the approval from the highest authority.

Though the group HR head seemed to have adopted a hands off approach on the decision process and supplier selection, he was keenly following and guiding both tasks. For example, he ensured that suppliers got a favorable time to present at the divisions and that division heads were present at most supplier presentations. He would regularly email division heads to ensure that the process was not delayed. He would talk to the suppliers after their presentations to understand the questions asked by the divisions.

R2CNGL: She was the head of recruitments with the division that had wanted independent campus recruitments. She had worked to help create an aspirational image for the division because of which they were among the preferred companies to work for

on leading engineering and business school campuses. She considered herself to be a “*process oriented*” recruitment professional and believed that her division had superior recruitment expertise as compared to most other companies in the country.

She learned of the plan to centralize and outsource HR from her division head and was agitated by the idea. She expressed her anguish to the division head and suggested how this would be highly problematic especially for campus recruitments. She worked with the division head to create a tactic to oppose HR outsourcing on multiple fronts and then agree to support the project if they can create an exception for campus recruitments. The division had indicated to R2CNGL that outsourcing HR had the group CEOs approval and hence could be easily wished away.

AUAN

AUAN was a leading automobile ancillary company in India and had contracts with Indian as well as international automobile providers. The group believes its strength was in the high technical capability of its engineers and its ability seamlessly integrate with customers. They prided themselves for the fact that their top management was dominated by engineers. AUAN had strong business performance in the 1980s when there were only two automobile companies in India and even now when all the leading automobile companies and their ancillaries were present in India.

The decision at AUAN was on whether to outsource the management of indirect materials, that are popularly known as maintenance, repair and operating supplies (MRO). AUAM independently maintained stocks of MRO items at all its manufacturing facilities. More than 60% of the MRO items were commonly required at all the facilities

and yet because of the legacy operations purchasing, inventory management and accounting for the MRO items were done independently. This led to substantial overstocking, high use of space as well as an excess cash outlay.

An MRO outsourcing service provider takes over the complete management of MRO parts. They support the organization by deploying their own vendor list and help in procuring low cost and high quality spares. They also take the responsibility for inventory management, storage and obsolescence concerns. Firms with multiple locations can have substantial benefits from MRO outsourcing. However, there are concerns that the use of non-standard inventory by outsourcing suppliers could cause long term machine damage¹⁵.

AUAN had a substantial increase in revenues in the last ten years but the profitability had reduced. A consulting report suggested that AUAN should focus on core areas and that they could consider outsourcing. Based on this report AUAN had already outsourced areas like payroll processing, facilities management, food services and IS help desk. MRO outsourcing was one of their first major outsourcing projects in a core function.

The consulting company had developed a matrix that tracked the productivity of functions and the functions with low productivity were deemed to be fit for outsourcing. As per this matrix, MRO management required a substantial more effort than the value it generated. The matrix suggested MRO outsourcing. The report that calculated the productivities of all the functions had arrived two weeks before the annual business strategy review meeting and the accounts head managed to add consideration of this

¹⁵ <https://spendmatters.com/2012/02/23/key-considerations-for-mro-outsourcing/>

report on the agenda. The double-digit reduction in profits forced the attention of top management on MRO outsourcing.

It was decided to call the suppliers for a presentation and learn about the actual benefits of MRO outsourcing. A task force with the materials managers as its head was designated to manage the task. MRO operations currently reported to the materials manager. At this meeting, it was implicitly assumed that MRO would be outsourced and the task force would decide the supplier. The task force was to report the development in the mid-year review meet.

The task to outsource MRO was complicated by the head of production who demanded rigid guarantees on the quality and brands of material used by the supplier. The head of production would pose difficult questions in supplier presentations to try and expose the limitations of the outsourcing suppliers. He compiled a list of companies in the region that had outsourced MRO management and conveyed that all of them were not satisfied. Additionally, he also presented opinions of unit level production heads who also opposed the outsourcing project.

The materials manager and other task force members responded by instituting a counter survey of the local companies to learn about their MRO outsourcing experience and how to avoid problematic situations. They also listed the questions asked by the production head in the first two presentations and included them in the supplier invitation. They hoped that this would assist the suppliers in being prepared to answer the questions. They also instituted a monthly progress report that would report the developments to the top management. This report forced the production head to be timely in his response.

The task force had met 5 suppliers in 4 months, and they presented their report to the top management in the mid-year review meeting. The production head submitted another report highlighting the potential problems of outsourcing and the benefits of keeping it inhouse. The decision was kept in abeyance in the meeting. Less than a month later top management announced the decision to outsource MRO on the exact terms recommended by the task force. It was rumored that the top management had a private meeting with the production head before this announcement and had informed him about the board's decision to ignore his report.

RIAUAN: She was the most recent recruit among the middle managers at AUAN and had been with AUAN for the two years. She was employed in the Middle East and was looking for opportunities to return to India. A mutual contact connected her to the board member of AUAN who was impressed with her profile. She was recruited as the head of materials and her task included managing the material stores, receipt and dispatch of materials, material rationalization and MRO operations.

She understood the opposition of the production head. "*MRO and production are tightly integrated in facilities like ours. Outsourcing would have forced them to redevelop all the informal relationships and rules.*" She tried to engage with the production head but pulled back seeing his hostile attitude. She took an extreme position and only communicated with the production head through formal channels. She kept track of all the concerns raised by the production head and tried to address them.

R1AUAN felt that she could influence the top management because of her strong data collection and data presentation skills. She had developed these skills while working in an *international environment in the Middle East*. She mentioned that in terms

of content as well as the presentation, the task force's report was far superior to the production head's report. She believes that it was the comprehensiveness of the task force report that swayed the board.

CHM1

CHM1 is a leading global player in chemicals and was present in diverse areas. They had a hybrid global structure where employees in every country would have dual reporting to the country manager as well as a global manager. The production was segregated into centers of excellence. For example, India headed the manufacturing of certain textile products globally and Malaysia headed some category of polymers. The case centered around outsourcing of maintenance operations in two of its India facilities.

The performance of the maintenance function can be easily measured by the equipment downtime and facilities with higher downtimes are said to have inefficient maintenance. However, the downtime is also a function of the age of the machines, the type of spares used, the cooperating of production in allowing maintenance shutdowns, etc. Outsourcing maintenance benefits by formalizing the production and maintenance department relationships and also the higher skills of the service provider. In older facilities, the idiosyncratic behavior of machines may however make new service providers ineffective¹⁶.

The India operations of CHM1 had substantially higher maintenance related equipment downtimes as compared to the American and European operations. The India

¹⁶ <https://www.automation.com/en-us/articles/2016-2/the-big-maintenance-dilemma-in-house-vs-outsourcin>

maintenance team attributed to the age of machines and the nature of products. The machine downtime was problematic, but it did not impact production since both the facilities were operating at 65% utilization. The successful outsourcing of maintenance in Malaysia drew the attention of India top management towards the possibility of outsourcing maintenance in India. The Indian team involved the global manufacturing excellence team and initiated this project.

The project involved a joint team of maintenance professionals from Malaysia and the global manufacturing excellence division exploring the possibility of outsourcing. This involved assessing the capability of the maintenance function and maintenance procedures in India, rating the capability of the machines and also a high level analysis of the maintenance service providers in India. The team was to submit its report to the India head of production and the global head of manufacturing excellence.

The joint team instituted audits at both the facilities in India. They analyzed recent failures, generated predictive maintenance reports for key machines, studied the maintenance department documents and talked with maintenance managers as well as technicians. The team made five visits to the facilities and each visit was for one week. The joint team report was very critical of the maintenance operations, indicting the function for the high rate of failures as well as the high cost of maintenance. The report strongly recommended outsourcing and suggested updating the weak maintenance procedures before outsourcing. The India management shared the report with the facility and functional heads and requested their views. Based on the replies received, the top management accepted the report and set up a schedule to improve the procedures and

outsource maintenance in the next 12 months. The Indian maintenance function was not involved in this decision process.

R1CHM1: She had started as a maintenance technician and had risen to the position of head of maintenance at one of the facilities. She had worked in multiple petrochemical companies in her 19 year career. Because of her technician background, she had a detailed understanding of maintenance tasks and this bestowed her respect from the maintenance as well as the production executives and technicians. Though there was general dissatisfaction with the excessive machine downtime, her job performance was never questioned.

She was aware of the high downtime and felt that the maintenance team did not receive adequate cooperation from the production department. For instance, if the maintenance technician noticed an abnormal sound from one of the equipment and requested a temporary shutdown, the production would take a long time to accede to such requests. According to her such delays were the main cause of equipment downtime. Also, breakdown maintenance took more time and was more expensive than pre-breakdown repairs. Further, the material stores were very slow in procuring maintenance tools and this forced them to create workarounds in maintenance.

She had tried to discuss these issues with the joint team and apprised them of the records to show the delays in granting maintenance approvals. She emphasized the skills of her team in managing the function despite the lack of resources. She also reasoned with the works manager and requested him to inform the joint team about the local problems. Additionally, she promised to work with her team to substantially reduce the downtime over the next 6 months.

However, she knew that she was fighting a losing battle. The joint team had made very diligent observations that could not be refuted. Not only were the failure rates high, but the Indian facilities used substantially higher spares and the average life of machines was lower than global benchmarks. For example, the slurry pumps needed a change of bearings every 5 months in India, while this number was 14 months in Europe. She tried to reason that the cost of bearings in India was less than 20% of the cost in Europe, and so the net costs were lower. These arguments seemed to have no influence at all.

CHM2

CHM2 had 6 medium sized facilities in western India manufacturing aromatic and specialty chemicals. Their plant operations were decentralized but purchasing had a hybrid structure. Certain products like benzene and furnace oil were centrally procured and other items were purchased by facility level purchasing executives. CHM2's products were cost sensitive but CHM2 had a strong market presence since their average cost of raw materials was lower than the industry benchmarks. This lower cost afforded the central purchasing head a high status and substantial clout.

This clout was problematic for facility level production managers. CHM2 purchasing was inflexible in their procurement plan and this restricted the production's ability to satisfy urgent customer orders. The inflexibility also reflected in their lack of cooperation with purchasing. For instance, one facility of CHM2 was procuring a powdered alkali in 100 kilogram sacks. The production manager requested a dual packaging where the 100 kilogram bags would have four 25 kilogram bags. The process recipe needed 25 kilograms of the alkali in one batch and the dual packaging would have

reduced the task of weighing. However, purchasing refused to consider this request. The plant managers reported such incidents to the central technical services team that oversaw manufacturing. They also reported this to the finance head since they had an indirect reporting relationship with him. Neither of them managed to make purchasing more flexible.

The idea of outsourcing purchasing transactions was raised by the new finance head. He was brought in to effect a substantial change in the capital structure of CHM2. In the first month of his job, the finance head conducted meetings with all the functions directly and indirectly reporting to him. He learned about the inflexibility of purchasing in these meetings. He accepted that substantial cost efficiencies could be achieved if purchasing was more cooperative. The plan to outsource purchasing transactions was to extract this cooperation.

The finance head made a presentation for his first monthly review meet and highlighted the challenges from manufacturers in China and the impending changes in environmental regulations in Europe. He extrapolated the current performance to imply that CHM2 needed substantial cost optimization to not face adverse conditions in the next 5 years. The CEO agreed with the assessment and requested all the functional heads to offer inputs of cost reductions in their function.

The first set of suggestions offered by the functional heads involved minor improvements and “*doing better what they were already doing.*” When these suggestions were presented the finance head suggested that they should explore “*doing something that they were not yet doing.*” He highlighted future challenges and requested the functional heads to offer more bold cost reduction suggestions. He had a private meeting

with the CEO to propose that functional heads might be reluctant to suggest bold measures since they were apprehensive about the impending changes. He requested the CEO to address these apprehensions.

The finance head introduced proposals to outsource purchasing, production and finance operations in the next meeting. He also offered detailed calculations on cost reductions from these actions and listed other chemical firms that had instituted such changes. His proposal showed how each of the three outsourcing projects would support the future vision of the firm. Production operations outsourcing was summarily rejected since it was considered a core operation. Finance outsourcing did not seem to have substantial benefits and was rejected. Purchasing outsourcing showed substantial benefits and allowed buyers to stay focused on strategic activities. It was the only option that was left available. The purchasing head tried to object. The other functional heads countered the purchasing head and it was decided to explore outsourcing of purchasing transactions.

R1CHM2: She was the manager of purchasing at one of the units. She had worked in this role for the last 2 years. Since the products were cost sensitive, she had a focus on controlling the costs of purchased goods. Towards this, they had created a policy of *“being the best customer of their suppliers.”* CHM2 made all the payments on time, had the lowest credit period in the industry, made minimum changes to delivery schedules and kept the suppliers completely aware of development and shutdown plans. It was because of this behavior that CHM2 had the lowest purchasing cost. She cited how a benzene trader had informed CHM2 to postpone their quarterly purchase since the international benzene prices were likely to reduce. Other buyers did not have access to such advice.

R2CHM2: She was the production planner at one of the facilities and was troubled by the inflexibility of purchasing. She had 12 years of experience and worked for three other chemical companies. She had never seen purchasing blatantly disregard requests from production like they did at CHM2. She had learned to manage the inflexibility by setting higher minimum stock levels for most products and thus ensured that production would have a stock of the needed raw materials.

She was appreciative of the finance manager's skill in driving the decision to outsource purchasing. She remarked how he managed to unite all functional heads and generate a unanimous decision on what could have been a contentious topic. She had seen the finance manager's proposal and was impressed with the level of detail.

R2CHM2 felt that since the outsourcing service providers would report to the technical services, this outsourcing would indirectly impact the power of the purchasing head. She expected that this would make the purchasing more flexible towards internal customers.

DMFG

DMFG was a leader in precision industrial machinery in Indian subcontinent, Middle East, North Africa and southeast Asia. They had only one manufacturing facility in Western India for all their products. Their products required a high level of manufacturing skill and adherence to close tolerances. Given this, the manufacturing function had highest status within the firm. Also, this competitive position placed high demand on the maintenance function to ensure that machines were reliable and could perform exactly as per specifications. That is why DMFG had what they believed was the most qualified and the most expensive machine maintenance program in the industry.

The maintenance function was composed of three sub-functions mechanical maintenance, electrical maintenance and instrumentation maintenance. The mechanical and electrical sub-functions could be considered as expert versions of such functions in other industries. However, the instrumentation sub-function and its integration with the other two sections was what gave the maintenance function its edge. For example, most firms would have temperature or pressure gauges attached to equipment to judge its health and need for maintenance. At DMFG, the key equipment had vibration monitors with electronic data loggers that predicted the exact nature of maintenance needed substantially in advance of the break-down. The mechanical and the electrical sub-functions would work with the instrumentation sub-function to decide on how and where to use such instruments and then stay involved to monitor the results. While these interventions created high reliability, the cost associated with the maintenance function was also substantially high.

DMFG had a very reputation in the market, but since 2010 they had seen a consistently reduced growth in the rate of capital investments¹⁷. Also, among the new facilities the investments into precision equipment were further reducing. Thus, the DMFG was under pressure to reduce prices and make their products affordable to the market. A direct impact of the price pressure was on the manufacturing facility which was asked to find ways to reduce operations cost by 20% over the next 4 years. The CEO was approached by a maintenance service provider with a proposal to take over the entire maintenance function. They promised a substantial reduction of manpower and

¹⁷ https://www.theglobaleconomy.com/India/capital_investment/

equipment costs and assured continued high reliability. Outsourcing maintenance would help in achieving more than a third of the desired 20% cost reduction.

The maintenance function was strongly entrenched in the manufacturing facility and the CEO knew that any attempt to outsource maintenance would not be acceptable to the managers as well as the engineers at the manufacturing facility. He discussed the proposal with the board and obtained their informal approval. He then invited the head of maintenance and the works manager to the head office to inform them about the possibility of outsourcing maintenance. In the meeting, the CEO assured the head of maintenance of his position post outsourcing and promised the works manager continued reliable service.

R1DMFG: She was the head of maintenance at DMFG and had 16 years of work experience in maintenance function. She was a rare breed of what she called *data oriented maintenance professionals*. She felt that in spite of the tremendous development in maintenance technology, most maintenance managers were reluctant to invest time in understanding them. She felt that the typical maintenance managers were more comfortable with a spanner in their hands than sitting in front of a computer. Her ability to deliver exceptional service at DMFG was because of her ability to move from the traditional role and embrace maintenance technology. She had led the team in moving the focus from reduced breakdowns to reliable equipment performance. Because of this, the maintenance function at DMFG was tightly integrated with the manufacturing facility, unlike most other firms where production and maintenance are always in a state of conflict.

She knew the purpose of the meeting from her sources in the head office even though she had not been intimated of the exact agenda. She equipped herself with data on equipment reliability at DMFG and also comparative numbers of industry benchmarks. He also shared this information with the works manager and they jointly deliberated on ways to desist the CEO from outsourcing maintenance. Their plan was to highlight the maintenance achievements, demonstrate the intricacies of maintenance and also deliver an implicit threat of non-cooperation with the new supplier.

The meeting with the CEO started with a presentation by the maintenance service provider. The CEO reiterated the informal buy-in that he had from the board and explained the detailed analysis of cost savings. He also assured the maintenance head of her position within the firm and suggested that the decision was necessary to help the manufacturing achieve its target of 20% cost reduction. The CEO accepted that it was necessary for the engineers at the facility to accept this decision and suggested that the maintenance head use her position and reputation at the facility to drive the decision.

She negotiated some concessions but accepted the CEO's mandate. Since the board, the CFO and CEO were all convinced about outsourcing maintenance she did not find it prudent to oppose them. She figured that by supporting the outsourcing project, she could still stay in control of the process. Also, though the goodwill generated with this support she hoped to create benefits for herself in the future. And, overall, the service provider did seem to have the relevant skill and she was certain that she would be able to deliver the high reliability even with the outsourced service provider.

The maintenance outsourcing was projected as a campaign to elevate the manufacturing facility. She assumed the position as the leader of this campaign and

worked to convince the engineers of the benefits of this move. The framing of this campaign was designed to make the outsourcing seem a proactive move towards better operations rather than a reactive move to save cost. Most of the maintenance technicians were offered positions with the service provider and an enthusiastic atmosphere was created to drive outsourcing.

R2DMFG: She had a 21-year experience in manufacturing and was the works manager at DMFG for the last 6 years. She was a strong supporter of R1DMFG and was extremely satisfied with the *abnormally service oriented maintenance* at DMFG. She was ready to support R1DMFG in getting the CEO to not outsource maintenance. He felt it would be extremely difficult for an external service provider to deliver the same level of reliability. Therefore, he was surprised to see R1DMFG support the CEO's mandate. But, since R1DMFG was going to continue in her position and oversee the new service provider, R2DMFG supported this change. He was however skeptical about the change and feared a reduction in machine reliability.

PMFG

They are a large scale manufacturer of household and industrial plastic products. They have 9 medium sized facilities all over India. The facilities were flexible, and most facilities could manufacture their entire product range. The purchase, finance, marketing and human resources functions were centralized and stationed at the head office. Manufacturing was driven by experts stationed at three of their oldest facilities. The facilities were drones with very little ability to plan or design. The MRO operations were decentralized. The facilities had contracts with local providers for MRO materials. The

contracting and management of materials was done by the facilities head and the local raw material stores executive. The decentralized operations were expensive since the facilities lacked the ability and resources for detailed analysis. But, decentralization reduced the task of managing MRO items for the head office.

One of their facilities in North India had a major shutdown all their 8 injection moulding machines broke down. Injections moulding machines have an extensive hydraulic system and the machines have an in-line oil filtration system. The facility claimed that the online system was not delivering the expected level of service and purchased an offline filter. Because of improper use, the offline filter did not clean the fluid to the necessary specifications, and this caused 7 out of 8 machines to fail in less than a month. An audit by the original machine manufacturer revealed that there was no need to procure the offline filter and that the facility had not used the specified filter element in the inline as well as the offline filter.

This finding triggered a study by the head office to judge the MRO practices at all the facilities. The study team included relatively junior executives from finance and accounting and purchasing. The team made multiple visits to all the plants and compared the manufacturer recommended parts with the parts procured by the facilities. The study report claimed major discrepancy in MRO operations and suggested an overhaul of MRO practices. Another team was set up to recommend the overhaul procedure suggested that the MRO operations should be centralized and then outsourced.

R1PMFG: She was the material stores executive at a facility in Western India and she managed the inbound raw materials and the outbound finished goods. Additionally, she was also involved with contracting and buying of MRO items for the facility. She had

12 years of work experience where she started as an accounts clerk and then moved to materials management. She had worked at this facility for the last 8 years and had friendly relations with the executives from all other departments in the facility. She felt that all of them at the facility had developed a strong bond and were able to together achieve the targets that the head office set for them.

She heard about the breakdown and was sympathetic to that facility. Since her facility was also similar, she knew that there were so many things that could cause such havoc. In fact, even at this facility they had a few near miss events and they were lucky that none of them turned into accidents or breakdowns. Given the constraints that they were operating under, such events could never be completely avoided. That is why she was surprised with the head office was blaming the facility for the event. And she was even more surprised when the head office constituted a team to study MRO practices at all the facilities.

She felt the team that visited her facility had hardly any understanding of materials management or technical aspects of moulding. They had come with documents that had the original specifications for spares and were blindly comparing it with specifications of parts in the store. And even more surprising was the recommendation to centralize and outsource MRO operations that came in two months later. That diktat from the head office seemed an unjust accusation about their operations. They were not given a chance to respond to the report. And, their views on changes to be done were never sought.

So, when the head office requested for information about the machines at the facility, their typical maintenance schedules, recent part changes, etc. R1PMFG took

longer than the allocated 2 months. The report that she finally sent in was minimal and she reported many items as unknown. For some items she attached photocopies of the original machine manuals and she knew that those were not very helpful. And, when a central team was deputed to visit the plant and get data she reported in sick. R1PMFG did not do this on her own accord and the senior manager of the plant supported the latent non-cooperation.

The plant manager asked the head office to send both the reports – the one that assessed MRO operations and the other that recommended centralization and outsourcing. He insisted that the head office share the detailed analysis and calculations. He added that R1PMFG had been instructed to not share any data till they get the required information. Both the plant manager and R1PMFG were associated with the local political party. Because of this association, both of them were confident that PMFG head office would not be able to reprimand them. Also, it was not that they were against centralization and outsourcing, it was just that the basis for the decision was not sound.

They later learnt that 3 other facilities had also refused to cooperate on this project. The head office sent in more teams to try and extract the data from this facility. The plant manager also received invites to visit the head office and discuss the issue. The plant manager was adamant for a detailed justification for the change. The exchange continued for the next year and after that the project to centralize and outsource was shelved. The head office sent in a detailed note to ensure that only the spares specified by the original equipment were used and that any change had to be approved by the manufacturing experts.

APRL

The company was an export oriented unit in Southern India and supplied apparels to major retailers in the US and Europe. ARPL not known for high quality but was considered reliable and they managed to satisfy all the contractual clauses. APRL was part of a vertically integrated group of companies that also included spinning and dyeing factories. The group was family owned. The spinning factory was established first and the group gradually integrated forward. ARPL had a very informal and unstructured work environment since many employees had been with the group from the initial stage and they had adopted new roles over time. The information systems (IS) architecture was also not very structured had also grown organically along with the growth of the group.

A large part of billing and materials management was being done through the use of spreadsheet tools. Every unit in the group had a separate tax software that was locally developed. The payroll system was also independent. For other administrative needs, the units had developed their applications asynchronously. The group did not have a datacenter and all their data was either on individual computers or hosted online on email applications. APRL had been given access to customer order systems so that they could receive orders, enter the invoice and dispatch details and compliance data. These were all web applications and designated APRL employees would log in and extract the data or enter new data at relevant intervals.

A few customer firms had cases of ransomware threats where hackers obtained access to their systems by leveraging the weak security of suppliers' IS. In order to mitigate such threats, a few customers had initiated an audit of their suppliers' IS. APRL had to respond to questionnaires from 3 major customers in one month. All 3 customers

raised major red flags about the IS infrastructure at APRL suggesting major changes. These changes could be managed in two ways – APRL could either buy servers and create a local secure datacenter, or they could outsource entire datacenter operations.

APRL management used the customer request to initiate major operational changes. They announced that entire IS operations would be outsourced and the existing IS employees would be replaced with contract workers. Formal work regulations were introduced. For example, earlier an employee could leave early by getting verbal consent from his supervisor. But, under the new proposed system, the employees would have to file a written request that would be logged and approved through a process. Though the customer requests were limited to data security and customers had not suggested specific actions, APRL management claimed that all changes were required by customers. APRL management portrayed that the changes would have to be implemented in the next 3 months and were necessary to ensure business continuity.

R1APRL: She was a commerce graduate and had learned about IS during his work stint at APRL. She was recruited at APRL immediately after her graduation as a data entry operator. Immediately after getting this position, R1APRL enrolled herself for IS courses. So, when APRL needed to modify their website, R1APRL volunteered and her work was appreciated. With similar contributions, she gradually rose to head the IS function at APRL. She knew her technical expertise was limited, but she felt her key skill was in being able to learn new tools to keep herself relevant at APRL.

The APRL management had informed her about outsourcing the IS function completely before announcing it formally. The management indicated who the service providers would be and wanted her to ensure a smooth transition. They hinted that they

would find some other role for her within APRL. Based on the past events she did not trust this assurance but realized that she did not have an option. She planned to cooperate with the APRL management and help with the transition to the best of her abilities.

A senior production engineer had contacts with other apparel manufacturing firms in the region and discovered that similar customer audits in those companies were restricted to IS. He managed to procure a copy of one such audit report and shared it with colleagues at APRL. The APRL management became aware of this and tried to convey that the auditors were different. The management refused to share the original audit report citing confidentiality concerns and urged the employees to support the changes. However, APRL management had lost the trust of employees and knew that the employees would offer minimal cooperation out of compulsion.

APRL management dropped plans for immediate changes. They were aware that without employee participation the proposed changes had a low chance of success. Other companies in the area had invested in buying a secure server that was supported by robust security applications. Since APRL was given a short time to make changes by the customers they decided to go ahead with similar investments and announced that the operational changes were temporarily postponed.

APPENDIX D

IRB APPROVAL FOR EXPERIMENT

EXEMPTION GRANTED

[Thomas Kull](#)
[WPC: Supply Chain Management](#)
 480/965-6125 Thomas.Kull@asu.edu

Dear [Thomas Kull](#):

On 3/3/2020 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Knowledge Asset Outsourcing Decision: Cognitive antecedents for managerial decisions
Investigator:	Thomas Kull
IRB ID:	STUDY00011630
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	<ul style="list-style-type: none"> • Consent for and recruitment script: Corporate, Category: Consent Form; • Consent form and recruitment script: Academic, Category: Consent Form; • HRP 503a, Category: IRB Protocol; • Survey for Academic participants, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Survey for Corporate participants, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Survey for Raffle Academic, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 on 3/3/2020.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Piyush Shah
Thomas Kull
Piyush Shah

APPENDIX E

IRB APPROVAL FOR CASE STUDY

EXEMPTION GRANTED

[Thomas Kull](#)
[WPC: Supply Chain Management](#)
 480/965-6125 Thomas.Kull@asu.edu

Dear [Thomas Kull](#):

On 4/20/2020 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Knowledge Asset Outsourcing Decision: Aggregation of Opinions
Investigator:	Thomas Kull
IRB ID:	STUDY00011746
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	<ul style="list-style-type: none"> • Consent form, Category: Consent Form; • Form-Social-Behavioral-Protocol IRB.docx, Category: IRB Protocol; • Interview Protocol, Category: Other; • Recruitment script IRB1.pdf, Category: Recruitment Materials;

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 on 3/31/2020.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator
 cc: Piyush Shah
 Piyush Shah