THE KNOWLEDGE OF OUTSOURCING: A KNOWLEDGE-BASED VIEW PERSPECTIVE

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Abstract
We developed an outsourcing matrix for predictive and explanatory purposes. Propositions are developed based on strategic value of the knowledge sets and transferability of knowledge. The make-or-buy decisions and the intensity of the outsourcing relationship are most apparent. We argue that the most intensive outsourcing relationship develops when the outsourcing of a knowledge set has been externally legitimized, the information involved is explicit and easily codifiable, and competitive advantage is partially dependent on function, but not directly tied to other core knowledge sets. In these circumstances, knowledge sets are outsourced after an exhaustive search followed by close monitoring and information exchange. These situations are characterized by symbiotic relationships, information sharing, giving and receiving commitments, forming alliances, and trying to control the outsourced knowledge set. Conversely, the most benign relationships occur when outsourcing has been externally legitimized, the information involved is explicit and easily codifiable, and the resulting separation has little effect on the knowledge sets responsible for creating and sustaining a competitive advantage.

Keywords
Knowledge-based view, firm boundaries, outsourcing, make-or-buy decision

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INTRODUCTION

Knowledge management has entered into a new era; we are living in knowledge societies and working as knowledge workers (Drucker, 1993). This new era requires an ever increasing amount of distinct knowledge to sustain a competitive advantage (Spender, 1996; Grant, 1996a) with information being the commodity capable of yielding new knowledge (Dretske, 1981). Information flows are essential for new knowledge creation and the incorporation of existing knowledge (Dierichx & Cool, 1989).

From the knowledge-based view (KBV) of the firm (Grant, 1996a; Spender, 1996; Nonaka, 1994), it can be concluded that information exchange and the knowledge the firm creates leads to a sustainable competitive advantage. Indeed, Winter (1987) insisted that firms have the ability to use knowledge to gain a competitive advantage. Many researchers claim that human capital is potentially of greater importance than other organizational resources in achieving a sustainable competitive advantage (Grant, 1996a; Spender, 1996). Scholars increasingly view knowledge as the primary source of economic rent (Spender & Grant, 1996). KBV purports that knowledge is integrated into and carried through multiple organizational features including culture, routines, policies, and individual employees (Spender, 1996; Grant, 1996a; Nelson & Winter, 1982). Since knowledge resources are inherently complex and difficult to imitate they can produce a sustainable competitive advantage.

A competitive advantage originates from difficult-to-imitate and valuable resources (Barney, 1986; 1991; Lippman & Rumelt, 1982; Penrose, 1959; Prahalad & Hamel, 1990), especially knowledge (Grant, 1996a; Spender, 1996). The possession and alignment of these resources is then defined by boundary choices (Chesbrough & Teece, 1996). While numerous theoretical approaches have been used to evaluate the firm’s boundary decisions (e.g., Galbraith, 1977; Lawrence & Lorsch, 1967; Thompson, 1967), the principles established in transaction cost economics (TCE) has been primarily followed by existing research (Coase, 1937; Pfeffer & Salancik, 1978; Williamson, 1985; 1999) arguing that the optimal organizational form is derived from the characteristics underlying an exchange. Despite the recent dominance of TCE, there has been a call to examine these boundary conditions using KBV, with the promise of discovering new and beneficial insights (Brouthers & Hennart, 2007; Liebeskind, 1996; Zhao, Luo, & Suh, 2004).

To examine these boundary conditions, we draw upon two streams of KBV research. The first stream of research focuses on how organizational choices are determined based on organizational learning and knowledge capabilities (Leblein & Miller, 2003; Oxley & Sampson, 2004). The second, consisting of limited research, examines knowledge-based predictors of boundary decisions (Carayannopoulos & Auster, 2010; Tiwana & Bush, 2007). In both streams, the make-or-buy decisions are overlooked or context bound. The purpose of this paper is to contextualize the make-or-buy decisions using the KBV and organizational learning frameworks. KBV is used to identify the internal conditions necessary for successful outsourcing, while institutional theory acknowledges the external constraints that organizations face. Organizational learning is used to closely examine the sourcing organization’s ability to assess learning capacities in potential outsourced relationships, which further defines boundary conditions of outsourcing in a different light.
This model is based on the principle that organizations have modules of information that are interconnected or can be separated from one another with limited effect. The interconnected modules make up a single knowledge set. We define knowledge sets as those resource combinations used to create value for the firm. As a value-creating entity, knowledge sets may result in a sustainable competitive advantage. For instance, Coca Cola creates value in its Coca Cola Classic product by combining water, sugar, and other commodity-like items in a way that creates a competitive advantage. The value stems from knowing what commodities to acquire and how to combine them to deliver an imitable product. PepsiCo may have access to the same commodities, yet, the manner in which they are combined creates different knowledge sets for the same or similar resources. Hence, different outcomes of such combinations exist. Therefore, an organization’s learning capacity influences its path of knowledge creation.

It is also apparent that different knowledge sets will be valued differently by the firm. Borman and Motowidlo (1993) discussed how some knowledge sets contribute directly to the “technical core” of the organization and that other knowledge sets contribute through support, planning, organizing, and supervising. Consistent arguments suggest that make-or-buy decisions within firms are conditional, based on their core competencies and available resources (e.g., Argyres, 1996a & 1996b; Barney, 1999; Quinn & Hilmer, 1994).

We go beyond core competencies by suggesting that there are key knowledge modules that are essential to creating and/or maintaining a competitive advantage. Specifically, there are knowledge sets that are valuable, uncommon and difficult to imitate (Barney, 1991; Grant, 1996a). These sets are essential to forming and maintaining a competitive advantage. The knowledge sets that do not directly contribute to the core competitive advantage knowledge sets become a candidate for separation and outsourcing.

To explore this notion, we develop a matrix along two continua comprised of the value of the outsourced knowledge set and the degree of transferability. To construct this model, we examine the ambiguous nature of the term knowledge, review tacit and explicit knowledge, review knowledge creation for explicit knowledge and for tacit knowledge, look at knowledge transfer (a key component of prediction and matrix separation), examine the role of organizational learning, and develop the key components of our outsourcing matrix and provide testable propositions.

THEORECTICAL DEVELOPMENT

Tacit and Explicit Knowledge

Individual knowledge creation is measured by both tacit (only manifests in its application and is not amenable to transfer) and explicit knowledge (capable of transfer and hence has low transfer costs). A great deal of knowledge cannot be expressed by words (Polanyi, 1966). For instance, experienced equipment operators possess a great deal of tacit knowledge that allows them to consistently produce high quality parts, even when the equipment is not operating effectively. In this case, the operator uses his or her specialized knowledge, which stems from trial and error, to fine tune the equipment. The ongoing application of trial and error techniques reside with the operator. Hence, there is a personal quality to tacit knowledge that makes transfer difficult (Nonaka, 1994). On the other hand, explicit knowledge can be articulated in various forms, hence reducing the cost to transfer from one individual to the next (Grant, 1997).
While knowledge often rests within individuals, the processes used to store and transfer that knowledge (to harness it and use it later) resides in the capacity of the organization to learn.

Organizational Learning

March and Simon (1958) and Cyert and March (1963) made earlier attempts to explain organizational learning through the use of routines. This learning is captured when an organization stores knowledge through the use of procedures, norms, and rules, which organizations accumulate overtime through the knowledge of their members (March, 1991). A debate has ensued concerning the locus of new knowledge creation. While the importance of the individual has been argued by a few scholars (Grant, 1996a; Simon, 1991), the major focus has been on the organizational unit’s obtainment and creation of knowledge (e.g., Spender, 1989; 1996; Kogut, 2000; Kogut & Zander, 1992; 1995; Nahapiet & Ghoshal, 1998; Nelson & Winter, 1982; Nonaka, 1991; 1994; Winter, 2003) by describing a process that initiates at the individual level and leads to the organization through a spiraling effect. To gain a greater understanding of knowledge and firm integration we now turn our attention towards these knowledge integration methods.

Knowledge integration produces an organizational capability with a value, dependent on the organization’s ability to capture and integrate the knowledge of numerous specialists (Grant, 1996b). Grant (1996a) highlights four mechanisms used to integrate specialist’s knowledge: rules and directives, sequencing, routines, and group problem solving and decision making. Management must establish the coordination between specialists to allow this knowledge integration to take place (Grant, 1996a). Grant (1996a) solidifies his point by underscoring that tasks requiring explicit knowledge are usually centrally located and tasks requiring tacit knowledge are increasingly becoming decentralized and left to the discretion of the specialists. If firms face turnover, this capability depends more on the mechanisms of integration, such as routines, than on any specialist’s knowledge (Grant, 1996a).

“If knowledge is only held at the individual level, then firms could change simply through employee turnover”… thus, hiring new employees is not equivalent to “changing the skills of a firm” (Kogut & Zander 1992, p. 383). Instead, the knowledge of a firm involves the interactions of various knowledge types being created, circulated, conserved, and established within the firm through various mechanisms. (Spender, 1996). Nonaka (1994) describes these mechanisms as beginning at the individual level and funnelling out into the organization. It is through the interaction between tacit and explicit knowledge that organizational knowledge is created (Nonaka, 1991). Tacit and explicit knowledge can be converted in four ways which Nonaka refers to as modes of knowledge conversion: from explicit to explicit, from tacit to tacit, from explicit to tacit, and from tacit to explicit (Nonaka, 1994). These mobilized interactions between all of the four different modes of knowledge conversion become faster in speed and larger in scale as more employees in and around the organization become involved. This creates an upward spiral process that starts at the individual level and moves up through the department level until reaching out into the organizational level (Nonaka, 1994). In essence, the process is taking the knowledge created by individuals and making it available and
amplified until it is connected to the knowledge system within an organization (Nonaka & Von Krough, 2009). Therefore, organizations serve as mechanisms by which new knowledge or learning is created and by which knowledge is transferred (Kogut and Zander, 1992).

New learning and innovation is the result of a firm taking existing knowledge and generating new applications using combinative capabilities. Combinative capabilities refer to the ability of the firm to build on and learn new knowledge, and then use that new knowledge to its full potential (Kogut & Zander, 1992). Similarly, Nekar (2003) argues that future creation of new knowledge is dependent on both an organization’s current and historical knowledge. The root of knowledge creation may lie in the individual, but the benefit “centers on its externalization and amplification through dynamic interactions between all four modes of knowledge conversion” (Nonaka, 1994, p. 20).

Knowledge Transfer

“Information is that commodity capable of yielding knowledge and what information a signal carries is what we can learn from it” (Dretske, 1981, p. 44). Perhaps the most important behavior is the readiness of individuals to share information (Gagné, 2009). The knowledge sharing process is the act of mutually exchanging information or knowledge and jointly creating new knowledge (Van den Hooff & de Ridder, 2004). Companies are challenged primarily with identifying what knowledge employees already possess and what information employees require to achieve an organization’s objectives (Lepak & Snell, 2008). Equally important is the exchange of information, which leads to innovation and learning; allowing organizations to maintain the competitive edge necessary. This emphasizes both the importance of compiling information and of managing its flow among employees (Lepak & Snell, 2008). Exchange is one of two processes that result in new resource creation (knowledge) (Nahapiet & Ghoshal, 1998). The second process is combination, which requires an exchange. “Even where the opportunities for knowledge exchange and combination exist, these opportunities are perceived as valuable, and parties are motivated to make such resource deployments and engage in the knowing activity, the capability to combine information or experience must also exist” (Nahapiet & Ghoshal, 1998, p. 249).

This information exchange, views tacit and codifiable knowledge as two interdependent dimensions of knowledge and emphasizes that the tacit dimension of knowledge is expressed in action (Miller, 2008). The codifiable part of this information exchange can be viewed as explicit and it is only when put into practice that it becomes tacit. Codification and simplification of knowledge into information increases its transferability. These exchanges often involve the transfer of explicit knowledge that is collectively held (Nahapiet & Ghoshal, 1998).

As previously mentioned, the ability of the firm to structure knowledge into a set of identifiable rules and relationships that can be easily communicated is known as codifiability (Kogut & Zander, 1992). The likelihood of imitation is increased through the clarification of knowledge and codification. It has long been believed that knowledge is a free commodity and is easily transferable. However, a firm’s complimentary assets decrease the likelihood of imitation (Spender, 1996). Firm specific knowledge is costly to transfer and is comprised of both explicit and tacit knowledge.
New knowledge or technology application can be “regarded as a new experiment which yields new information and new experience” (Teece, 1977 p.234). It is estimated that the costs of technology transfer vary from 2% to 59% of total sales (Teece, 1977) showing that some information is not readily transferable. If a process of change is implemented then individual knowledge creation is necessary. The more tacit or less transferrable the knowledge is, the more strenuous the change.

It is also common for knowledge resources to be intertwined with one another, reducing the likelihood of transference and reproduction capabilities. It is the entire system of knowledge resources that leads to a competitive advantage (Porter, 1985). Those systems that create a competitive advantage are located at the core and are high in strategic value. Those systems that are not at the core become expendable and as a result are strong candidates for outsourcing. Performance advantages can be protected by the complexity and tacitness of the knowledge (McEvily & Chakravarthy, 2002). Wang, He, and Mahoney (2009) found that firm-specific knowledge will improve economic rents if the firm has governance mechanisms in place that support knowledge transfer. This empirical evidence indicates that knowledge assets play a vital role in achieving superior economic performance.

A source of competitive advantage stems from a broad range of knowledge resources available across firms within the same industry (Lee & Cole, 2003). This implies that what one firm values as firm-specific knowledge might be of little consequence as a knowledge resource to their competitor. Indeed, knowledge resources vary by industry and organization, suggesting knowledge resource bundles are rarely the same (King & Zeithaml, 2003). Thus, different knowledge resources and knowledge sets (modules) provide different values.

**Vertical Axis: Core Strategic Value of Knowledge Sets**

A goal of an organization should be to position itself so that separate knowledge pieces spanning the organization can be combined (Hedlund, 1994). Combining different information and experiences creates innovation and knowledge expansion, which is accelerated by the diversity of opinions (Nahapet & Ghoshol, 1998). Thus, knowledge resources that are not at the core of the company’s strategic value are less necessary and can begin to diverge from the core knowledge system. The potential of organizational knowledge to the competitive advantage of the firm depends on the value of this knowledge. These core knowledge sets are crucial to the competitive advantage of an organization (Porter, 1985). In addition, these core knowledge sets require continual internal development (Quinn, 1992). The competitive advantage of the firm can be jeopardized through any outsourcing of these combinations. This is due to the possibility of eroding the firm’s compiled core skills (Bettis, Bradley, & Hamel, 1992). To this end, information transfer and the knowledge it creates is most valuable when it is applied to the knowledge set bundles that are responsible for a competitive advantage.
**Horizontal Axis: Knowledge Transferability**

Haas and Hansen (2007) show that explicit knowledge directly affects the efficiency of performance through the use of codified knowledge (explicit to explicit knowledge transfer) and that the transfer of tacit knowledge from an employee to another coworker (tacit to tacit knowledge transfer) has an effect on the quality of the performance for the individual receiving the information. When these two knowledge components interact knowledge is created, but to what ends? That is, when does effectiveness and efficiency matter the most? When is knowledge creation the most valuable to a firm?

As illustrated above, the current knowledge and the knowledge creation that matters the most is that which is capable of sustaining and creating a competitive advantage. Thus, when considering collections of knowledge, it is those organizational units comprised of firm specific tacit knowledge that aid in the competitive advantage. This would imply that the more valued form of knowledge (tacit) that aids in sustaining and creating a competitive advantage would be the most sought after and most likely to be acquired. Indeed, tacit knowledge is the most valuable form of knowledge with the potential to create a competitive advantage (Reed & DeFillippi, 1990). This opposes a knowledge set made up of primarily explicit knowledge, which is less likely to aid substantially in the achievement or sustainment of a competitive advantage. In such cases, assuming it is not intermingled with core knowledge assets, the knowledge created from such a unit could easily be outsourced, having little effect on an organization's competitive advantage.

In these cases knowledge creation more often resembles the process discussed by Grant (1996) where routines and rules seem to dominate. Whereas, the tacit knowledge process leading to a competitive advantage seems to resemble processes of Nonaka (1994), Spender (1996) and Kogut and Zander (1992). The tacit knowledge creation, with its cyclone type process, leads to a competitive advantage that routines and rules cannot account for. For example, payroll functions are often outsourced to various specialists (e.g., CPA firms; see Barthelemy, 2003), which are often routine and rule-guided workers. If knowledge is created within this department it may aid in the efficiency of payroll services, but will do little to help achieve a competitive advantage. Furthermore, if the company uses resources to aid in information transfer and the creation of this knowledge set, they are not likely to see a return on their investment. Since this knowledge creation is of little value to the organization as a whole, it can become a prime candidate for outsourcing. Similar examples are with customer service representatives (Barthelemy, 2003) and information technology (IT) personnel (Weigelt, 2009; Barthelemy, 2003). Any information accumulated by these organizational units, unless core to their competitive advantage, can be outsourced without impacting the knowledge set based competitive advantage. This is represented by the bottom right quadrant of Figure 1. In this category, the functions of knowledge sets are outsourced to a competent and competitively priced agency with minimal relationship building necessary. These relationships are characterized by the ability to change the outsourcing agency fairly easily without major cost or loss of time.
On the other end of the spectrum, we have a greater likelihood for whole ownership and acquisition. This occurs because of the spiraling nature of knowledge creation leading to increased tacit and firm specific knowledge. This type of knowledge will be of greater importance to achieving a competitive advantage. The more firm specific and tacit the knowledge, the greater the performance of such knowledge and the less likely that it can be replicated (McEvily & Chakravarthy, 2002; Wang et al., 2009). In addition the spiral nature is likely to align it with and build on other knowledge, which can contribute to the creation of a web or system of knowledge (Porter, 1985; Nekar, 2003).

An example of this can be seen when looking at the pharmaceutical or technology industry. In most cases research and development knowledge sets are vital for their competitive advantage. Therefore, any knowledge sets pertaining to R & D is likely to be wholly owned or acquired if necessary. Since the companies are more dependent on their R & D for creating and sustaining a competitive advantage, they are more likely to maintain knowledge sets that influence the knowledge creation and information transfer of the research and development department. Conversely, they are likely to outsource any knowledge set not influencing R&D or any other competitive advantage aiding knowledge set. Due to its immediate impact on their competitive advantage, a company would do well to promote information exchange and knowledge creation. This knowledge set is vital for creating a competitive advantage, which is represented by the top left quadrant of Figure 1.

When you compare and contrast these two ends of the spectrum (i.e., top left quadrant to bottom right quadrant) the difference is quite clear. When knowledge creation of the internal organizational unit impacts the sustainability of the competitive advantage the knowledge set will remain within the company. For example, in the first scenario, the knowledge sets of payroll could grow without end, becoming more effective and efficient until it approaches perfection and still have little consequence to the firm’s competitive advantage. Contrarily, the knowledge sets of R&D could grow in small increments and have substantial consequences to

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the competitive advantage of that same firm. From this perspective, the outsourcing firm has determined that internal value creation is most appropriate. Thus, we offer the following propositions.

**Proposition 1a**: The more a knowledge set is essential to achieve or maintain a competitive advantage, the less likely there is a firm that exists that possesses the learning capacity to warrant outsourcing.

**Proposition 1b**: The less a knowledge set is essential to achieve or maintain a competitive advantage, the more likely there is an external firm that possesses the learning capacity to warrant outsourcing.

The troublesome area emerges when the knowledge sets are easily transferable, but is still a major component of the competitive advantage. To distinguish between the top half of the axis, we look at the transferability of knowledge sets as indicated in Figure 1. As touched upon briefly, if a knowledge sets is built into the fabric of the overriding core knowledge structure, it has become firm specific and aids the company in producing a competitive advantage (Quinn, 1992; Bettis et al., 1992; Porter, 1985). Thus, this knowledge set is no longer easily transferred and cannot be effectively taught to outside sources. The interdependence of information exchange and activities that is required to create and integrate new knowledge with core knowledge sets affects the potential of benefits from outsourcing (Kogut & Zander, 1992; Grant, 1996). Ongoing communication, knowledge exchange, and mutual adjustment between actors carrying out various parts of the knowledge creation process are all required by interdependent activities (Thompson, 1967; Gulati and Singh, 1998).

This implies that a different knowledge set may vary in its importance for companies that are within the same industry (Lee & Cole, 2003; King & Zeithaml, 2003). This may help explain why some organizations outsourcing the same function as other organizations face more condemning results (Ang & Toh, 1998; Bryce & Useem, 1998; Barthelemy, 2003). The difficult decision arises when a knowledge set is critical to the competitive advantage, but is not entwined into the rest of the core knowledge and can be reproduced by an outside source with limited effect on the competitive advantage.

Now it becomes essential to make a distinction between the two quadrants at the right side of the matrix. To do this we take a more in-depth look into outsourcing. Outsourcing is a method employed to reduce costs, improve performance, increase efficiency, foster innovation, and refocus on core functions by attaining access to specialized resources, learning opportunities, and cutting-edge technologies (Gilley & Rasheed, 2000; Barthelemy, 2003; Hamel, 1991; Powell, Koput, & Smith-Doerr, 1996; Brown & Eisenhardt, 1997; Poppo & Zenger, 1998). Outsourcing has gained increased momentum as highly visible companies have shown to be successful in their outsourcing endeavors (See: Huber, 1993; Cross, 1995; McFarlan & Nolan, 1995).

In the past, many of the organizational functions were carried out internally due to a lack of outside suppliers. The opportunity for organizations to reassess which activities should be outsourced has been provided by the continuing growth of supply markets (Jennings, 1996). Although firms may now have more opportunities to outsource business functions, many of these types of initiatives fail to fulfill all the expectations of management (Bryce, & Useem, 1998).
Barthelemy (2003) identifies several reasons as the source of outsourcing failure. These include outsourcing activities that should not be outsourced, losing control of outsourced activities, writing a poor contract, and selecting the wrong vendor. Despite these failures it has been shown that many firms do indeed succeed (Lee, 2001; Mesquita, Anand, & Brush 2008; Takeishi, 2002; Tiwana & Keil, 2007; Huber, 1993; Cross, 1995; McFarlan & Nolan, 1995). While, there are many reasons why outsourcing activities fail, the literature points to one primary reason outsourcing succeeds: information exchange (Lee, 2001; Mesquita et al., 2008; Takeishi, 2002; Tiwana & Keil, 2007).

This is also the primary difference between the top right and bottom right side of the matrix in Figure 1. As the knowledge set increases in importance towards achieving a competitive advantage, so too does the information exchange and relationship building efforts involved. The lower right quadrant is less intensive and can use third party services. This can save an organization money and time by utilizing expertise or knowledge sets that these specialty services hold. Through practicing and transmitting information learned within ‘generic’ applications of service to other clients or the business function and from the knowledge accumulation that stems from deploying these services in client firms, third parties have the ability to specialize in developing this expertise. (Attewell, 1992; Swanson, 1994). Considerable adjustment and modification of the process for use by client firms may be required due to the idiosyncrasies of business processes even though the third parties are a valuable source of knowledge sets (Leonard-Barton, 1988; Fichman & Kemerer, 1997). Indeed, the more the function is tied to the competitive advantage, the more modification and monitoring is needed. In order to effectively deploy and enforce formal outcome controls, a firm must maintain knowledge of all outsourced activities (Tiwana & Keil, 2007). Conversely, the less a knowledge set is needed to achieve a competitive advantage, the less modification is needed and the more generic knowledge sets can be. While monitoring is still necessary, it need not be as pervasive or time consuming as in the case with the relationship intensive outsourcing related to the upper right quadrant.

Organizations outsourcing in the upper right quadrant are likely to build symbiotic relationships, share information, receive commitments, form alliances, and when applicable, gain power over the knowledge set that is outsourced. An example of this includes the vertical alliances observed between car manufactures and their suppliers. Even if the outsourcing company holds power over the outsourced knowledge placed with a strategic partner, information exchange is still necessary to enhance the outsourcing organization’s competitive advantage (Mesquita et al., 2008). Effective symbiotic relationships involving information flows are beneficial to both the organizations and the outsourced knowledge sets. For instance, the more automakers know about the outsourced components of a car, the better the outcome. If automakers appropriately monitor and maintain prevalent knowledge of the outsourced activity, the increased benefits will soon follow (Takeishi, 2002). Similarly, it has been found that knowledge and performance increase from vertical alliance training (Mesquita et al., 2008). Trained suppliers outperformed others, achieving a competitive advantage that can be passed onto the organization it supplies (Mesquita et al., 2008). Similar examples of information exchange benefitting both the outsourcing organizations and their outsourced knowledge collection have been found in other industries using different outsourced functions (See: Lee, 2001; Tiwana & Keil, 2007; Borys & Jemison, 1989; Demsetz, 1988; Thompson, 1967; Gulati & Singh, 1998; Wheelwright & Clark, 1992).
Thus we offer the following propositions.

**Proposition 2a:** The more an outsourced knowledge set is tied to the competitive advantage of a firm, the more (a) monitoring, (b) information exchange, (c) relationship building, (d) long-term contracts and (e) shared expenses a firm will have with the outsourced knowledge set, when compared to less strategic knowledge sets.

**Proposition 2b:** The less an outsourced knowledge set is tied to the competitive advantage of a firm, the less (a) monitoring, (b) information exchange, (c) relationship building, (d) long-term contracts and (e) shared expenses a firm will have with the outsourced knowledge set, when compared to more strategic knowledge sets.

**Proposition 2c:** The less an outsourced knowledge set is tied to the competitive advantage of a firm, the more likely the use of a generic third party knowledge set.

However, we once again return to the type of information transferred to determine if outsourcing will be successful. For example, if knowledge can be codified or made into a routine, a firm can utilize outsourcing to enable the use of external expertise for performance enhancement (Weigelt, 2009). Outsourcing is more likely to be useful if activities are sequential, can be easily divided into separate sub-activities with clearly stated rules, and have low interdependence (Wheelwright & Clark, 1992). However, in a supplier relationship the transfer of tacit knowledge is less likely to succeed if transferred using codified information (Borys & Jemison, 1989). Indeed, explicit knowledge sharing is a more effective way to achieve outsourcing success and substantial knowledge transfer in an outsourcing relationship (Lee, 2001). In contrast, vertical integration facilitates the transfer of knowledge, when knowledge is tacit, through shared language and experience among organization members (Arrow, 1974; Monteverde, 1995). In this situation it is likely that outsourcing will be inferior (Weigelt, 2009).

**Proposition 3:** The transferability of knowledge will moderate the outsourcing and performance relationship.

This examination helps to illustrate the difficulty between transferring tacit knowledge between two organizations. In many firms, there are tacit knowledge sets that are not vital for competitive advantage and the cost and performance differential is not worth the benefits they would receive from outsourcing this collective. An example of this includes support functions tied directly to firm specific assets (i.e., specialized mechanics, code writers). While, they might not be directly tied to the success of the organization, to train or expect an outside knowledge collective to perform effectively would be unrealistic. Therefore, the more firm specific a knowledge collective is, the more tacit knowledge required, and the less likely outsourcing will be beneficial. The cost of changing the system far outweighs any benefits received from outsourcing. However, as these support functions become less firm specific, the greater candidates they become for outsourcing. Similarly, as these support functions become more entangled within the core knowledge collective, the less likely they will ever be successfully outsourced. These interwoven and or technical capabilities represent the lower left quadrant.
Considering the value of the knowledge set and the transferability of the knowledge is important, one area of equal importance relates to the number of qualified potential outsourcing partners. Borrowing from Sanders, Locke, Moore, & Autry (2007), we offer some perspective on the number of qualified outsourcing partners by way of organizational learning capacities. In Sanders et al. (2007), a triangular figure is used to depict the number of relationships a firm is likely to have with a small number of alliances and a large number of suppliers that provide “nonstrategic transactions”. Extending from this notion, Figure 2 illustrates the value of knowledge sets based on the type of relationship. For instance, the outsourcing firm possesses unique combinations of knowledge sets which represent a single firm. Said firm may enter into a strategic alliance with only a few firms and a limited number of strategic partners due to the high value of the potentially outsourced knowledge sets. In this vein, firms must be able to assess an outsourced firm’s learning capacity to determine if the firm is capable of transferring knowledge and learning how to maintain or enhance the source firm’s competitive advantage. Alliances and strategic partnerships demand greater cooperation from both parties (Heide, 1994) along with a shared sense of risk. Given this, moving down to the base of the triangle yields more supplier relationships where organizational learning is not of primary concern as the inherent value of the knowledge sets is low and the supplier is more transactional in nature. Thus, we offer the following proposition.

**Proposition 4:** The organizational learning capacities of the outsourced firm will moderate the value of knowledge sets and the availability of capable suppliers.

Furthermore, firms seeking to outsource valuable knowledge sets run the risks of an alliance firm or strategic partner becoming a direct competitor, due to the close coordination and integration needed to transfer valuable knowledge sets. For instance, during the early development of the iPhone, Apple outsourced a highly valuable knowledge set (the phone’s chip) to Samsung. Eventually, Samsung became Apple’s most fierce competitor in the smartphone market. In assessing the organizational learning capacities of potential suppliers, firms seeking to outsource must determine the degree of integration that both parties are capable of and willing to engage in, to make the relationship a success (Mudambi and Tallman, 2010). Alliances may require process adaptations, whereas strategic partners may only demand shared information. Organizations capable of learning from others can make the necessary process adaptations and share information in a manner that does not threaten its competitive advantage. Hence, we offer the following proposition.

**Proposition 5:** Firms seeking to outsource highly valuable knowledge sets are more likely to have strong organizational learning capabilities.
DISCUSSION AND FUTURE RESEARCH

This study has used the knowledge-based view (KBV) of the firm to further explain outsourcing decisions. Indirectly, the work herein also contextualizes the ever-expanding boundary of the firm. As more and more firms enter into outsourced relationships, the boundary of the firm expands to include these “outsourced extensions” as part of the firm. For instance, the Office of the Comptroller of the Currency (the OCC) in the U.S. regulates banks to help protect customers. When a bank outsources a process, such as electronic image processing, to a supplier, the OCC views the supplier as an extension of the bank’s enterprise. Hence, more intricate explanations of outsourcing are needed.

This study contributes to the organizational learning, KBV, and outsourcing literatures in numerous ways. First, this study examines how organizational learning aids in the competitive advantage decision making process. This contribution is two-fold in that it suggests that firms considering outsourcing should look at internal organizational learning capacities and those of potential suppliers. An organization’s ability to learn relates to its ability to create a competitive advantage, which is the internal perspective. The capacity to learn from the marketplace enhances the firm’s adaptability. On the other hand, by examining the organizational learning capacities of suppliers, the outsourcing firm will be better equipped to enter into the most beneficial supplier relationships and maintain a watchful eye on competitive forces that may stem from the outsourced relationship. Examining organizational learning across both fronts could provide the firm with insights to drive necessary adaptations.

Second, this study specifically identifies the conditions in which make versus buy decisions are considered. We begin to address firm boundary questions such as how much and when to share information with outsourced providers, when to outsource, and when to acquire? Addressing these questions will help future research by clarifying the boundaries of the firm. By conducting this future research, we can examine two distinct outsourcing relationships, one which involves a strong relational base and the other which is more benign. This study allows...
for explanatory power for when these two relationships are likely to exist and the characteristics that surround the relationship.

The most likely scenario for a minimal outsourcing relationship (i.e., lower right quadrant) is when the outsourcing of a given knowledge set has low value, is easily codifiable, and its separation has little effect on the knowledge sets responsible for creating and sustaining a competitive advantage. In these circumstances the functions of knowledge sets are outsourced to a competent and competitively priced agency with minimal relationship building necessary. These relationships are characterized by the ability to change an outsourcing agency fairly easily without much cost or loss of time.

Conversely the most likely scenario for an intensive relationship (upper right quadrant) to develop is when the outsourcing of a given knowledge set is explicit, of high value, easily codifiable, and competitive advantage is partially dependent on its function, but it is not directly tied to other core knowledge sets (assuming external organizational units can perform the function as or more competently at a reduced cost). In these circumstances, the functions of knowledge sets are outsourced after an exhaustive search followed by close monitoring and information exchange. These relationships are characterized by symbiotic relationships, information sharing, receiving and giving commitments, forming alliances, and perhaps when applicable, trying to gain power over the knowledge set that is outsourced.

Third, our study contributes to the outsourcing literature by identifying the need to examine organizational learning capacities as an evaluation/selection process for entering into a supplier relationship. The outsourcing literature primarily focuses on the physical products or services that are outsourced. By evaluating a supplier’s organizational learning capacity, additional measures of risk are assessed. These new measures provide insight into the firm’s long-term capabilities, which can help determine if the supplier is a worthwhile alliance partner or more of a transactional partner. Would firms want to entrust their valuable knowledge sets to a company who possesses limited organizational learning capacities? Or, would the company seeking to outsource prefer an alliance with a partner who exhibits endless learning capacities? These questions offer rich inroads for future research.

Future research, should add to this model by examining other boundary spanning conditions and decisions. A prime example of this would include joint ventures and horizontal alliances. Current work, although limited, is being conducted using KBV in determining the choice between alliances and acquisitions (Carayannopoulos & Auster, 2010). Their findings on acquisitions support this paper’s claims about knowledge value and complexity, but find that knowledge specificity and alliance experience are key for horizontal alliances. This is similar to Cohen and Levinthal (1990), who argued that prior related experience creates a greater opportunity for firms to be successful in their outsourcing endeavors. Expansion of the model to include knowledge specificity or prior experience may expand the matrix’s predictive capabilities. In addition, future research should examine where joint ventures fit along the continuum or if something similar to knowledge specificity needs to be added for additional explanatory power.

We began this paper mentioning that transaction cost economics was the dominating literature examining firms’ boundary decisions. Currently, the matrix only evaluates

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outsourcing from the perspective of KBV and institutional theory. The expansive work on vertical integration (Coase, 1937; Williamson, 1985; 1999) and other exchange characteristic may provide this matrix with valuable insights and predictive capabilities. In addition, theories outside of KBV, TCE, and institutional theory should be applied. Perhaps the matrix could be improved by adding elements of power from resource dependence theory. In either case approaching this matrix from additional theoretical lenses is likely to improve its capabilities.

Finally, future research should center on testing the propositions put forth in this paper and the generalizability of the outsourcing matrix. For example, future research could be used to examine the rise in information exchange between outsourcing relationships that are more tightly tied to strategic value. Similarly, it could examine the lack of information exchange as knowledge sets diverge from competitive advantage attributes. This perhaps could be identified by using a similarity of industry index and number of hours cross-training (or lack thereof) or the training expenses shared between two organizations. If this is unidentifiable, certain accounting measures may be used if attributable to the two organizations involved. The next step for research is to examine the propositions, the matrix as a whole, each quadrant individually, and perhaps expand the matrix itself.

In conclusion, this literature is unique and makes a contribution to two streams of KBV literature as well as the general outsourcing literature at large. It provides an easy to follow matrix, which can be used to aid in explaining and predicting firm boundary decisions. It is also the first of its kind to make predictions about the type of relationship and the amount of information flow that will occur following an outsourcing decision. We hope that future scholars will use it for predictive purposes, test it, and build on its axis and dimensions.

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