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Offshore or Not? An Transaction Cost Economics Analysis

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ABSTRACT

Transaction Cost Economics (TCE) theory is widely used to explain the appropriate governance structure for make-or-buy decisions. We adopt this theory to analyze firms' decisions and choices about offshore outsourcing, domestic outsourcing and internal procurement. The main findings of this paper are as follows: When asset specificity is low, offshore outsourcing is preferable. As asset specificity increases, firms start favoring domestic outsourcing. When asset specificity becomes very high, firms would rather produce it internally.

Keywords

Offshore outsourcing, transaction cost economics, make-or-buy decision.

INTRODUCTION

It is hard to imagine that just ten years ago outsourcing was a relatively new phenomenon that tended to be viewed with a mixture of anxiety and uncertainty. Nowadays IT outsourcing has become an integral part of the way many US companies do their business. The main reason they favor outsourcing is that it adds flexibility to their operations. It frees up capacity and allows them to focus on their core competencies, such as investment and relationship management. Besides outsourcing some of their business functions to domestic outsourcing companies, many client firms now outsource their IT and business processes to offshore vendors as a result of which offshore outsourcing has become quite popular in recent years leading to the coining of the term global IT outsourcing.

Global IT offshore outsourcing is defined as "any contribution to a client organization by one or more external vendors with a different country of origin in tangible, intangible, human and/or nonhuman resources to the IT infrastructure" (Kumar and Palvia, 1998). By 2010, US corporations are estimated to have saved \$390 billion through global IT outsourcing to countries, such as India, China where skilled IT workers are plentiful and also inexpensive (Fitzgerald, 2003). "It used to be that companies struggled for a few years to show a 5% or 10% increase in productivity from outsourcing," says Pramod Bhasin, CEO of Genpact, the 19,000-employee back-office-processing unit spun off by GE last year. "But by offshoring work, we can see savings of 30% to 40% in the first year in labor costs." (Engardio, 2006) Furthermore, offshore outsourcing is nowadays increasingly taking place in the service sector. As a result, many service activities are becoming more and more location independent (Hirschheim et al., 2005). Considering the most popular places for offshore outsourcing, India remains the leader in offshore destinations for software development, registering average annual growth of more than 40 percent over recent years (Sahay et al., 2003). This is mainly due to the combination of English language skills and the availability of a large pool of skilled IT staff. English language is widely spoken and many highly skilled programmers are available in India, and they are much cheaper than in the United States. And importantly, a large number of Indian software companies are International Standards Organization (ISO) and Capability Maturity Model (CMM) accredited (Hirschheim et al., 2005) with high levels of maturity on the CMM model. Comparatively, after the entry into the World Trade Organization, China is emerging to be a major supplier of software services (Sahay et al., 2003). China's development of software industry dates back to the 1980s. This industry developed very fast through the 1990s, growing by 30 percent in 1999 with \$2.16 billion in revenue. China is also perceived as a future threat to India in part due to the relatively advanced use of mobile phones and many more telephone connections (Sahay et al., 2003). Besides India and China, many major companies in the US and Western Europe are already sourcing expertise from other developing countries. For example, Microsoft has offshore arrangements in India, Russia, and Israel. IBM's Javabeans project owns centers in Riga, Minsk, Beijing, Bangalore, and North Carolina (Sahay et al., 2003).

While offshore outsourcing is a very hot topic in the media, domestic outsourcing is still much larger than offshore outsourcing (Hirschheim et al., 2005). The main concerns for global offshore outsourcing include communication problems due to few English language speakers, poor understanding of Western business culture, lower professionalization, and weak

intellectual property protection regimes in several offshore destination countries. Whenever and wherever global software outsourcing occurs, legal issues become a main concern, especially those pertaining to intellectual property rights (IPR). From the clients' point of view, they want to ensure that they retain ownership and control over their existing intellectual property but simultaneously also gain benefits from software development in offshore locations. However, this conflicts with the outsourcing providers' point of view because while they also want to protect their own IPR, they also wish to reuse software code they have already developed for one client on other projects to save time and expense (Brainard and Litan, 2004). Complexity of the task is another barrier that hampers offshore outsourcing. Some managers mention that when the task is very complex and the company-specificity of the outsourced process is very high, the cost of offshore outsourcing may be higher than the cost of hiring in-house experts. Further, according to (Hirschheim et al., 2005), education in some Asian countries might not be sufficient today to prepare workers in those countries for high-end, specialized, modeling or related jobs. However, this may not remain true for long. Some of these concerns help explain why domestic outsourcing may still be preferred to offshore outsourcing in many cases, even though there are clear cost advantages to offshore outsourcing.

While several authors have analyzed the factors that influence a firm's decision to outsource (e.g., Swinarski and Kishore, 2001, Ang and Straub, 1998), and some others have dealt with motivations behind outsourcing suggest that outsourcing decisions are propelled by high IT cost structures (e.g., Loh and Venkatraman, 1992, Smith, Mitra and Narasimhan, 1998, Teng, Cheon and Grover, 1995), perceived production cost advantages (e.g., Ang and Cummings, 1997, Ang and Slaughter, 2001, Ang and Straub, 1998), external influences (e.g., Ang and Cummings, 1997, Hu, Saunders and Gebelt, 1997, Loh and Venkatraman, 1992), environmental uncertainty (Nam, Rajagopalan, et. Al, 1996) and asset maturity (Kishore, Agrawal and Rao, 2005), there is no formal analysis in the literature that compares the contexts in which offshore outsourcing may be more preferable than domestic outsourcing and vice versa based on sound and accepted theories pertaining to outsourcing. The goal of this paper is to analyze a firm's outsourcing decision with respect to offshore versus domestic outsourcing versus internal procurement from the perspective of the transaction cost economics (TCE) theory. The rest of the paper is organized as follows. Section 2 provides a brief introduction of the TCE theory. Section 3 outlines the research model. Section 4 provides some discussion and offers directions for future research. Section 5 presents some concluding remarks.

LITERATURE REVIEW

Transaction cost economics (TCE) has been widely adopted as a theoretical model to explain the appropriate governance structure for make-or-buy decisions in an organization (Riordan and Williamson, 1985, Aubert et al., 1996, Aubert et al., 2004). The basic postulate of the TCE model is that a firm chooses an appropriate governance structure for conducting an economic transaction so it is able to minimize the total cost associated with that transaction. The foundations of the TCE theory were initially introduced by Coase (1937) and the TCE theory was named and developed further by Williamson (1975). TCE regards a transaction as the basic unit of analysis and holds that an understanding of transaction cost economizing is central to the study of organizations. Its basic idea is to explain why some products are produced internally within a firm using a hierarchical governance structure, while some others are purchased from external markets. According to Williamson (1981), a transaction occurs when a good or service is transferred across a technologically separable interface. Transaction costs include those indirect costs that are related to searching an appropriate vendor, information gathering, negotiation, bargaining, and the eventual monitoring of a contractual relationship (Coase, 1960). Comparatively, production costs refer to either the costs of producing a good internally or the price a firm has to pay to procure it from the external market. In the basic TCE model, only two organizational alternatives are considered: either a firm makes a component itself or it buys it from an autonomous supplier (Williamson, 1981). Nowadays, the basic model has been extended to include other scenarios, such as hybrid structures (Williamson, 1991).

In TCE theory, there are two basic behavioral assumptions (Williamson, 1981). The first assumption is the recognition that human agents are subject to bounded rationality. The second assumption is that at least some agents are given to opportunism. As a consequence of the first assumption, human agents that populate firms and markets differ from economic man, such that they are less competent in calculation. In other words, it refers to the computational limits of the organization man. Regarding the second assumption, a proclivity for economic agents to behave opportunistically is responsible for their unreliability (Williamson, 1981). Both of these assumptions increase the transaction costs of a transaction.

Also the critical dimensions for describing transactions include (1) asset specificity, (2) uncertainty, and (3) frequency of transactions (Williamson, 1981). Asset specificity is regarded as the most important dimension for describing transaction (Williamson, 1981). It refers to whether investments required for producing or procuring a good are specialized to the particular transaction. When assets required to produce the desired good have low specificity, buyers can easily turn to alternative sources and suppliers can sell their output intended for one buyer to other buyers without difficulty (Williamson, 1981). The importance of asset specificity lies in that, once an investment has been made, buyer and seller are effectively

operating in a bilateral exchange relation with both effectively “locked into” the transaction to a significant degree (Williamson, 1981). Uncertainty becomes especially interesting when asset specificity is considered (Williamson, 1986). Especially when asset specificity is high, uncertainty could greatly increase the transaction costs. Frequency of transaction is a main consideration when buyers and suppliers tend to maintain continuous transaction relationship. Overall, TCE theory predicts the most favorable governance structures for various scenarios which are essentially those that have better transaction cost economizing properties and will eventually displace those that do not economize on the transaction costs (Williamson, 1981). Williamson (1981) also shows that asset specificity arises in three ways: site specificity, physical asset specificity and human asset specificity. Subramani and Venkatraman (2003) expand on this classification and include two new types of asset specificity: business process specificity and domain knowledge specificity. Table 1 provides the definitions for these various types of asset specificity.

Asset Specificity	Source
Site Specificity	This type of asset specificity arises from the fact that the particular transaction can only be conducted at a particular site to economize on inventory and transportation expenses
Physical Asset Specificity	This type of asset specificity arises from the fact that specialized physical equipment are required to produce the desired product and which cannot be used for producing other products
Human Asset Specificity	This type of asset specificity arises from the fact that specialized skills are required for producing a good or service and often arises as a result of learning-by-doing
Business Process Specificity	This type of asset specificity arises from the fact that critical business processes of one firm are specific to the requirement of the other firm in an interorganizational relationship
Domain knowledge specificity	This type of asset specificity arises from the fact that critical areas of knowledge of a supplier firm are specific to the requirements of a buyer

Based on Williamson (1981) and Subramani and Venkatraman (2003)

Table 1. Different Dimensions of Asset Specificity

RESEARCH MODEL

Internal Procurement vs. Domestic Outsourcing

In this section, we discuss firm’s choice on whether to procure an IT service through internal procurement or through domestic outsourcing. This analysis is very similar to Williamson’s (1981) analysis on internal or market choices. Riordan and Williamson (1985) show that asset specificity is the main factor for deciding the differences in production and governance costs.

An overall low asset specificity indicates that buyers and suppliers are less dependent on each other and contractual control is, therefore, less necessary. When assets are nonspecific or have low asset specificity, outsourcing enjoys advantage in production costs due to economies of scale and scope. According to Williamson (1981), this is because static scale economics can be more fully exhausted by buying instead of making. Markets can also aggregate uncorrelated demands, thereby realizing risk-pooling benefits. And external procurement avoids many of the hazards to which internal procurement is subject. Similarly, in our case we can regard outsourcing as the “market” solution. However, as asset specificity increases, the advantage of economies of scale and risk-pooling effects reduces, thereby decreasing the advantage of production cost saving via outsourcing. As far as governance costs are concerned, when an IT service is procured internally, governance cost mainly comes from administrative costs. In IT outsourcing, governance costs involves the costs of searching potential vendors, qualifying them, bargaining, and writing monitoring and enforcement of contracts. Compared to the administrative costs in internal procurement, which are relatively independent from product specificity (Riordan and Williamson, 1985), outsourcing experiences lower governance costs than internal procurement. As the specificity increases, more costs are incurred in making a more secure contract, monitoring and protecting potential risks in outsourcing. The governance costs of outsourcing escalate as a result. However, internal administrative expenses don’t increase as a function of the product specificity. In this

case, internal procurement supplants external supply (Williamson, 1981). When those expenses on contracting extend the internal administrative fees, firms favor the internal solution in terms of governance costs. In all, both the production and governance advantage of outsourcing are functions of product specificity. Production advantage of outsourcing solution decreases as product specificity increases. And it will approach zero when product specificity becomes extremely high, until the production costs of outsourcing and internal procurement become indifferent (Riordan and Williamson, 1985). As product specificity increases, governance advantage of outsourcing decreases until to zero. After that, the internal procurement has the advantage in terms of governance expenses. When the total effect of outsourcing advantage remains positive, firms favor outsourcing. Otherwise, firms favor internal production. An illustration is shown as figure 1.

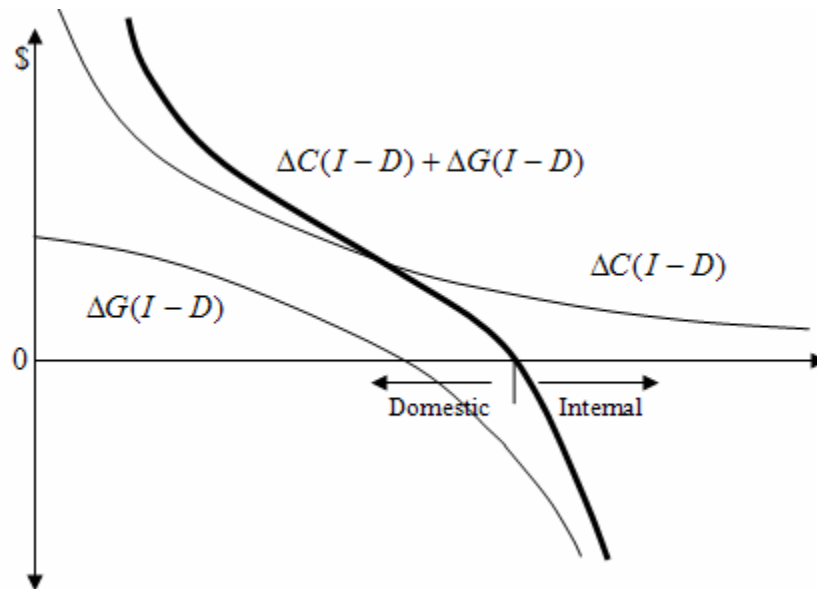


Figure 1. Internal Procurement vs. Domestic Outsourcing

Where $\Delta C(I - D)$ is the production cost difference: internal procurement minus domestic outsourcing.

$\Delta G(I - D)$ is the governance cost difference: internal procurement minus domestic outsourcing.

$\Delta C(I - D) + \Delta G(I - D)$ is the total cost difference: internal procurement minus domestic outsourcing.

Domestic Outsourcing vs. Offshore Outsourcing

In this section, we discuss firm's choice on whether to conduct domestic outsourcing or offshore outsourcing. We consider the firm's decision and evaluation on whether to choose domestic or offshore outsourcing. Since both of domestic and offshore outsourcing enjoy market characteristics, such as uncorrelated aggregation, and risk-pooling benefits, etc., their production cost difference is not as much as the production cost difference between internal procurement and market. It means the slope of the production cost difference curve (between domestic and offshore outsourcing) is much smoother. Since offshore outsourcing benefits from lower labor costs in developing countries, production cost of offshore outsourcing is lower in general. When overall asset specificity is low, labor cost savings in offshore outsourcing are much higher because the labor cost arbitrage in general-purpose lower-skilled labor force tends to be much higher as compared to the labor cost arbitrage when we consider highly skilled labor which can be used only in special purpose jobs. For example, the labor cost arbitrage in terms of percentage difference in the case of a farm hand requiring no specialized skills will be much higher than that for a highly skilled engineer. In fact in recent times, the salary levels of highly skilled personnel such as software engineers have risen tremendously in India and other offshore destinations due to the increased demand and relatively tight supply for these specialized skills. In the context of IT outsourcing, call centers and service response centers belong to the category where lower-level general-purpose skills are required. On the other hand, specialized vertical domain knowledge as well as specialized horizontal business process knowledge is required for software development projects in addition to specialized knowledge about specific languages and tools computer, contributing to a high degree of asset specificity in such projects. As discussed before, these specialized skills are much more expensive and the labor arbitrage for these skills diminishes. Further, in many cases, intelligent and talented high-tech workers enjoy global-pay benefits, even though they are

working in offshore countries, such as India or China. The offshore research centers of many high-tech companies belong to this case, such as the research centers of Intel and Microsoft located in China and India. Thus as asset specificity increases, the difference in production cost between domestic and offshore outsourcing scenarios tends toward zero, although positive. Now consider the governance costs. When the products have low asset specificity, both governance costs come from mainly the searching, negotiation and contract-writing expenses. Since offshore outsourcing requires international communication and coordination, it is easy to see that related governance expenses are much higher than domestic outsourcing. To be more specific, when asset specificity is low, costs of negotiation, contract writing, etc. are not much different. The main cost difference comes from communication expenses and the overall difference in transaction costs between domestic and offshore outsourcing is not that high. However, as asset specificity increases, much higher governance costs result in offshore outsourcing from increased risks, increased coordination needs, and dealing with uncertainties and resolving them. Furthermore, due to the geographical distance, it becomes extremely difficult to monitor the transaction partners effectively. As a result, the cost of monitoring and other quality control mechanisms may rise dramatically in offshore outsourcing when asset specificity is high. According to (Khan and Currie, 2003), offshore outsourcing has several characteristics that impact the risks of those transactions. Offshore outsourcing involves corporations whose IT capabilities differ vastly from those normally present in the United States, as well as employees whose culture and value systems may be quite dissimilar to those held by employees in the United States. So client firms need to deal with offshore providers that can not be “seen closely”, that own different industry culture, and that may even speak different languages. The higher transaction uncertainty compared to local or domestic outsourcing can never be neglected. In cases of some high environmental uncertainty, contract writing may also be very difficult, and the contractual gaps may enlarge and increase the number of adaptations of the contract (Williamson, 1986). Strong contracts and other preemptive intelligence gathering need to be taken into consideration to counteract those issues, otherwise unexpected costs in offshore outsourcing may be extremely high (Ang and Straub, 1998). Whang (1992) gives detailed explanations of a contract that appropriately controls for intellectual property disputes between outsourcing providers and recipients. Williamson (1981) also points out that in order to maintain a long-term relationship due to high asset specificity, the higher uncertainty could increase the necessity of insurance against opportunism and the adaptation of the contract. So from this perspective, the advantage of governance cost of domestic outsourcing over offshore outsourcing increases dramatically, as asset specificity increases. As a result, due to the concerns on risk, quality control and uncertainty, we propose that the initial advantage of governance cost of offshore over domestic outsourcing is negative, and the degree expands as the product specificity increases. An illustration is shown as figure 2.

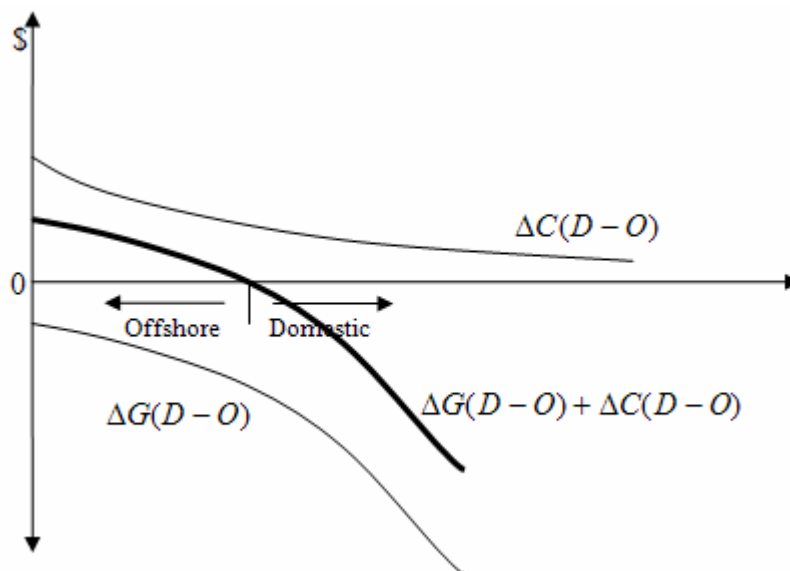


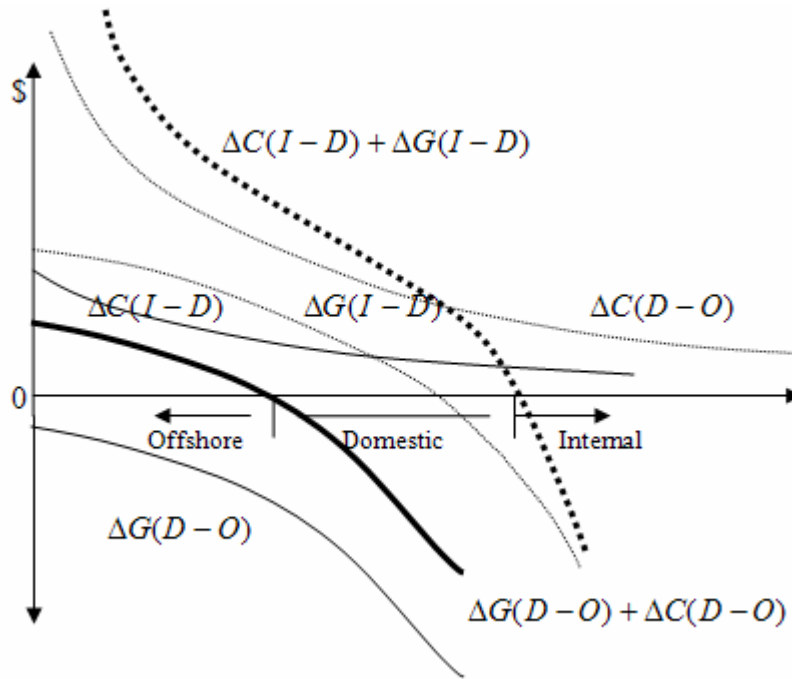
Figure 2 Domestic Outsourcing vs. Offshore Outsourcing

Where $\Delta C(D - O)$ is the production cost difference: domestic outsourcing minus offshore outsourcing.

$\Delta G(D - O)$ is the governance cost difference: domestic outsourcing minus offshore outsourcing.

$\Delta G(D - O) + \Delta C(D - O)$ is the total cost difference: domestic outsourcing minus offshore outsourcing.

The model is shown in figure 3. When asset specificity is low, the governance structure of offshore outsourcing is preferable compared to the other two options. As product specificity increases, the governance structure of domestic outsourcing takes the advantage over offshore options. When product specificity becomes very high, internal procurement will then be favored by firms.



Dashed lines referring to the case of internal procurement vs. domestic outsourcing
 Solid lines referring to the case of domestic outsourcing vs. offshore outsourcing

Figure 3 Integrated Model

DISCUSSION

From the integrated model, we notice that in order to increase the avenue favoring offshore outsourcing, the main solution is to mitigate the risks and increase quality control and monitoring mechanisms which are associated with offshore outsourcing. The existence of poorly developed infrastructures and culture environments that do not protect the rights of intellectual property ownership can greatly hinder the practice of an offshore outsourcing relationship. Regarding the model itself, as mentioned by Williamson (1981), transaction costs are difficult to measure. For instance, search costs and negotiation costs are difficult to quantify. So the model proposed in this paper is heuristic, and the slopes and intercepts of the curves in the model need further quantitative investigation. Further research on transaction cost theories on offshore outsourcing risks may offer a potentially interesting idea. It may also worth further investigation on how to increase the cost saving via sending work overseas while mitigating the risks inherent in offshore outsourcing transactions.

CONCLUSION

In this paper, we examined firms’ decisions on appropriate governance structures, including offshore outsourcing, domestic outsourcing, and internal procurement, from the perspective of transaction cost economics. Even though TCE has been criticized as over simplification of the complex decision-making processes (Ghoshal and Moran, 1996), we shed light on exposing the factors that affect firms’ outsourcing decisions. We have found out that when asset specificity is low, offshore outsourcing is preferable. As asset specificity increases, firms will favor domestic outsourcing. When asset specificity becomes very high, firms would rather produce the goods internally. While the results of our analysis may seem rather intuitive, the contribution of this paper is in providing a formal analysis in terms of asset specificity and production/governance costs to explain why certain types of IT activities are easily offshored as compared to other IT activities. Future research should focus on a detailed transaction cost analysis of domestic and offshore outsourcing scenarios by elucidating the contributors of the various types of asset specificities (discussed earlier) involved in various kinds of IT activities. Future research should also develop a formal transaction cost model including the various elements of production

and governance costs in both domestic and offshore outsourcing scenarios highlighting various IT activities in terms of increasing overall asset specificity.

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