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# Strategic Approach to Outsourcing the Research and Development Function

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## Abstract

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This paper proposes an approach for outsourcing the R&D function. This model is to serve as a strategic approach to outsourcing that considers number of elements with strategic competitive advantage as an ultimate objective. This paper suggest that outsourcing research and development should be planed and conducted from a strategic standpoint and have positive impact on organizational competitive position by incorporating it into the overall strategy of the organization to reduce the number of risks inherited in the outsourcing process, and ultimately, achieve competitive advantage.

## Keywords

Strategic outsourcing, competitive advantage, research and development.

## Introduction

The outsourcing process has long captured the attention of large and mid-size corporations. The concept of outsourcing is commonly associated with corporate core competencies. [Pralhad and Hamel \(1990\)](#) was a pioneer in the development of the relationship between outsourcing and corporate core competence. Prahalad & Hamel asserted that core competencies and physical assets are mutually exclusive. Core competence is the primary corporate objective and an irreplaceable asset, while physical assets are replicable and subject to obsolescence.

Since, numerous scholars attempted to propose a standard framework that can be applied to multiple industries and cross-functional in nature. In this paper, a model is developed to outsource the research and development function. This model is to serve as a strategic approach to corporate planners attempting to outsource the research and development function.

As outsourcing escalates among various industries of the international economy, mid and large-

size companies are increasingly outsourcing essential activities such as R&D overseas ([Grant, 2007](#)). The primary objective for such consideration is profit maximization through cost reduction, with little regard for long-term strategic competitive advantage ([Bertolini, Bevilacqua, Braglia, & Frosolini, 2004](#); [Chandler & Werther, 2006](#)). The process of outsourcing is perceived by various corporations as a crucial determinant of profitability and return on investment. Thus, increasing the outsourcing process could significantly contribute to corporate growth ([Burnes & Anastasiadis, 2003](#)). However, over the past 10 years, many studies have supported the hypotheses that organizations may not be attaining the expected benefits from outsourcing their R&D activities ([Barragan, Cappellino, Dempsey, & Rothenberg, 2003](#); [Epstein & Manzoni, 2004](#); [McIvor, Humphreys, and McAleer, 1997](#)).

[Kremic et al. \(2006\)](#) argued that true competitiveness was derived from management's capacity to combine organization-wide innovative capital resources, including R&D activities, in such a way that allowed organizations to adapt rapidly to changing market needs and set up a long-term competitive position.

The premise behind the analysis in this paper is to show that outsourcing research and development should be planned and conducted from a strategic standpoint, and by doing so, ultimately it will positively impact corporate competitive advantage. This is possible through the incorporation of such modeling into the overall strategy of the organization to reduce the risks associated with the outsourcing effort to achieve competitive advantage.

### ***Significance of the study***

Two decades since outsourcing activities began to attract the attention of corporations, outsourcing has become far more important today than it was a decade ago ([Cassiman & Veugelers, 2002](#); [Epstein & Manzoni, 2004](#)). Because outsourcing is can significantly influenced by corporate strategy, it is essential to examine the impact of developing outsourcing models on mid and large-size corporations. This study also will contribute to the available literature by (a) expanding the current understanding of strategic outsourcing practices, and (b) outlining better measurement processes to assist in improving current outsourcing efforts.

### ***Research Questions***

Based on the statement of the problem, the research questions of this study were as follows:

1. Does strategic outsourcing of research and development activities have an impact on mid to large-size corporate competitive ability?
2. Do corporations lack the approach to effectively attain competitive advantage?

### **Literature Review**

The subject of corporate competitiveness is critical to the outsourcing of R&D activities from a strategic standpoint ([Jiang & Qureshi, 2006](#)). For example, [Bamfield's \(2006\)](#) approach was to analyze the manufacturing practice used by large organizations from a competitive point of view in the way they are set up, which is vital to the success of mid to large-sized businesses. Furthermore, to distinguish the necessary components that provide organizations with the needed competitive edge, mid to large-size corporations must view outsourcing R&D activities in a competitive framework. For instance, when outsourcing

procurements in the manufacturing sector, it is important to note the various related issues tied up with the manufacturing process, such as research, development, and innovative talent, instead of considering only the natural resources required in manufacturing the end product (Bamfield, 2006).

Harland et al. (2005) contended that innovation is highly linked to competitive ability; therefore, innovation should be the primary objective in the consideration of any R&D outsourcing process. Influenced by cost-reduction thinking, many mid to large-size corporations have been outsourcing their R&D activities to focus on improving profitability. The current state of outsourcing R&D activities in these corporations is concerned with the means of achieving and maintaining higher profits and vigorous stock prices, with little regard for long-term competitiveness (Clott, 2007; Hemphill, 2004). In the 1990s, Fortune 500 corporations were outsourcing what are considered nonessential activities, such as marketing, distribution, and information technology. Recently, however, mid to large-size corporations have begun contracting out essential and strategic tasks such as planning, research, and innovation more than before (Click & Duening, 2004). For the past two decades, there has been great consistency in what R&D outsourcing and the potential impact of corporate competitiveness have meant for large corporations. Starting with Quinn and Mueller (1963), and moving on to recent studies on outsourcing R&D.

For example, some of the points that Quinn and Mueller mentioned as important for competitive outsourcing of R&D included (a) long-range planning to determine what technology is relevant to the company's business goals, (b) the establishment of an environment that motivates people, (c) the planning and control of technology transfer, and (d) top management attitudes that foster the development and use of new technologies. Dodgson and Rothwell (1994) compared nine studies of industrial innovation. Some of the success factors for industrial innovation that all nine studies identified were good communication, innovation as a corporate-wide task, efficient R&D, good planning and management techniques, and precision in identifying market needs.

Up to recently, it has been generally accepted that R&D can be effective in the organization only if it is integrated into organizational strategies. Noticeably, functions like design and project control are considered the domain of the R&D department; they also affect R&D effectiveness. To do well only in functions that are viewed as a domain of R&D can make an R&D department innovative, but it can never make an R&D department effective. To be effective, the R&D department must meet the strategic objectives of the company (Gottschalk & Solli-Sæther, 2006; Tafti, 2005).

Despite the generally accepted notions that R&D activities are essential to organizational competitiveness and that R&D as a department must be strategically integrated into organizational operations (Pearson, Nixon, & Kerssens-van Drongelen, 2002), since 1960, there has been no effort to measure outsourcing the R&D function, as defined in terms of organizational competitiveness. Instead, almost all measurement efforts have focused on R&D output (De Boer et al., 2006). These efforts have concentrated on three types of indicators: strictly technical products, such as patents, technical publications or citations to technical publications; profits, sales, or other financial benefits that are thought to stem from R&D; and judgments about the success of individual R&D projects (Bamfield, 2006; Hira & Hira, 2005, Kehal & Singh, 2006).

With regard to calculating a link between R&D and profits, sales, or other financial benefits, there have been many attempts to demonstrate such a link within a company. Galloway wrote about an approach used at Stauffer Chemical to determine the profits from products to which it was judged that R&D had made a critical contribution. Patterson (1983) described a tactic that Alcoa used to measure the financial benefits from major accomplishments in R&D. Merlyn and Parkinson (1994) reported a method that business

managers at British Petroleum used to judge the percentage R&D was contributing to corporate earnings. Chrispeels and Sadava (2003) also covered the same topic and came to a similar conclusion.

### **Methodology**

A mixed-model consisted of structured interviews and survey was adapted in this study. A series of structured interviews with senior managers and executives in 12 organizations was conducted. The objectives of interview with senior managers are to obtain a cross-functional perspective on the outsourcing process. These organizations represent large and medium size organizations engaged in outsourcing their R&D activities. Additionally, a total of 125 employee involved in the R&D function agreed to participate in this study by returning their surveys out of 1000 survey sent-out. This represented a response rate between 12%.

A 20% to 25% response rate would have been above average for survey returns, and if only 80 respondents had been obtained for each group, that would still have constituted a representative sample (Babbie, 1998; Rea & Parker, 1997). It is therefore believed that the number of respondents in this study represents a meaningful sample. The questionnaire consisted of twenty one Likert-scale questions.

### **Hypotheses**

The following null hypotheses were tested using a statistical significance level = 0.05 and =0.01 if a higher level of statistical probability could be attained.

H1: Current frameworks for outsourcing project are sufficient to attain competitive advantage.

H0: Better framework for modeling outsourcing projects is needed to improve competitive advantage.

Likert-scale data are often treated as interval data and *t*-testing parametric. *T*-test of the hypothesis testing process was conducted because of the level of response rate and close to normal distribution shape for the testing. *T*-testing supported the null hypothesis that better framework for modeling outsourcing projects is needed to improve competitive advantage.

### **Analysis & Findings**

Findings supports (Hemphill, 2004; Elmuti & Kathawala, 2000) that few organizations have taken a strategic outlook of outsourcing decisions, with many organizations deciding to follow the leaders in their industry for short-term reasons of cost reduction. In addition, many organizations found themselves duplicating a homogenous outsourcing model used by companies of the same size but not quite applicable to their own business model. The current outsourcing mechanism is already established since the late 1990's which supports (Bonifazi, and Desouza & Power 2004; Henry & Mayle 2002) theses. However, this is likely to have happened due to a sequence of short-term decisions with no contemplation for the long-term strategic position of the organization. This research supports (Qureshi 2006) findings that some of the problems organizations come across in their attempt to create a practical outsourcing methodology rest in lack of structured outsourcing approach.

Several organizations lack a methodological source of assessment of their outsourcing effort. This finding also supports argument raised by (Bonifazi, Desouza & Power, 2004). Analysis of this study found that countless organizations go about their outsourcing decisions mainly on the principle of cost reduction rather than a strategic methodological process. Further findings suggest that the decision of what business segment to outsource is evaluated on the bases of what will reduce the largest part of organizational costs, rather than on the

bases of strategic long-term advantage. This also supports Clott (2007) and Qureshi (2006) findings. Findings of this research suggests that (25%) of organizations are lacking the thinking of such issues as whether the company should attempt to keep and develop internal innovative means regarding specific business activities or whether it should outsource such activities.

Lack of benchmarking also exists among large companies (13%) that warrant strategic comparative advantages of differences between internal capabilities and outsourced capabilities. This finding also supports similar findings by [Elmuti & Kathawala \(2000\)](#). Hence, The assessment and evaluation of current outsourced activities in terms of measuring impact on competitive advantage is ultimately concerned with making recommendations of what approach organizations need follow to improve competitive advantage when outsourcing essential activities.

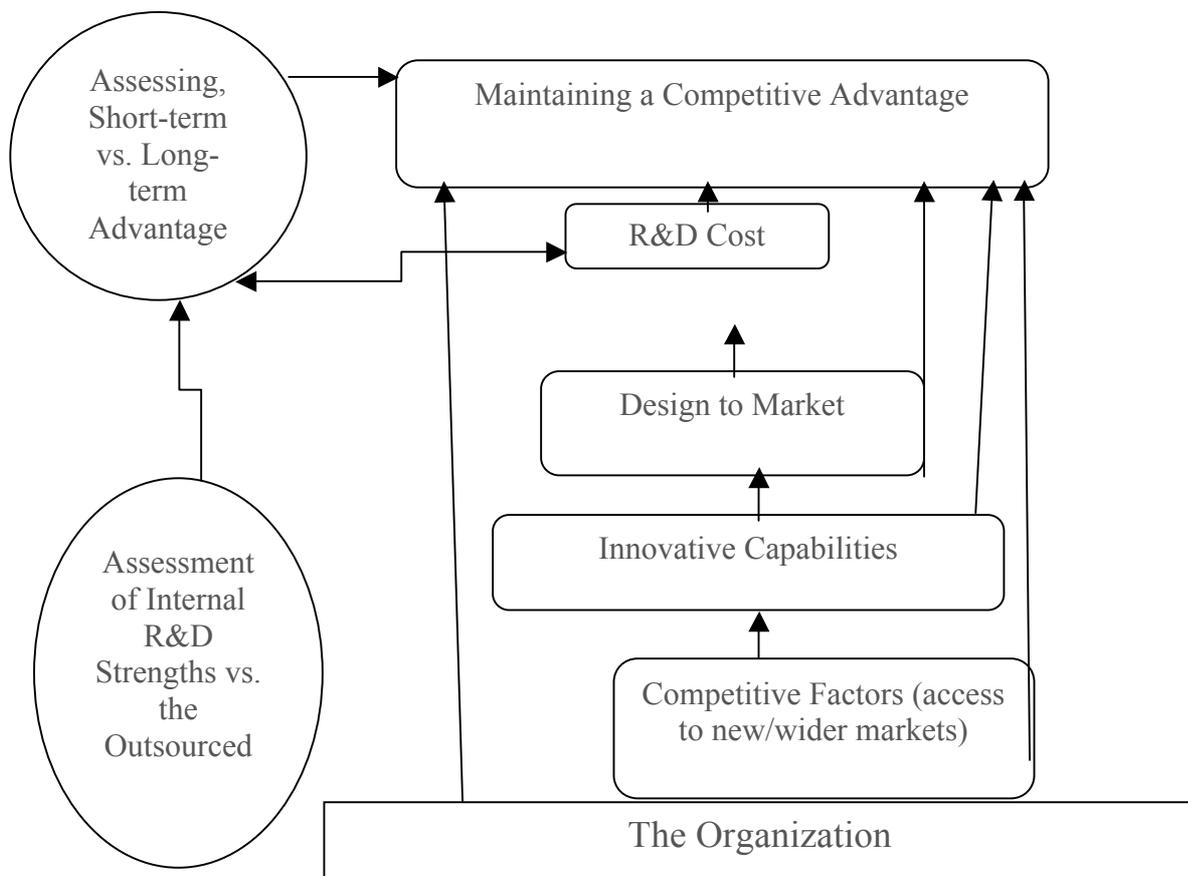


Diagram 1: STRATEGIC APPROACH TO OUTSOURCING

As a result of the research findings, an outsourcing approach was developed to assist in the process of decision-making. This approach is concerned with making recommendations and designed to serve as a roadmap. The strategic approach contains prescriptive elements to decision-making regarding outsourcing activities all with the single vision of attaining competitive advantage as an ultimate objective. The approach above suggests that organizations engaged in the outsourcing process, should carry out the outsourcing with careful evaluation of each element outlined in the model above. The outsourcing approach consists of a number of logically sequential steps designed to improve

competitiveness and achieve current organizational objectives such as cost reduction and access to expertise, but with careful assessment and evaluation of short-term vs. long-term advantages. The first step in the strategic approach is for the organization to determine what competitive factors to consider.

Although most organizations tend to share similar list of priorities, yet some organizations might put more emphasis on one element more than the other. For instance, one of the findings of the structured interviews conducted in this study was that organizations needed an access to the markets they outsource at. While other organizations needed to position their outsourcing approach more strategically to leverage on accessing wider market share due to geographical advantages. The innovative capability element extends to the product design process. The second step is to consider whether product development (design) may accelerate the overall process of innovation. Meaning, if the design group is closer to production then this might be more advantageous. In other instances however, distance between design groups and production is irrelevant largely because of product complexity and utilization of advanced technologies that makes it possible to monitor production from home country and video- conference mechanism. Moreover, there are cultural and cost considerations attached to this assessment. The second step in the strategic approach also includes comparing existing talent (within the organization, or accessible in the surrounding market) to existing innovative capabilities in the target country.

When considering outsourcing to countries such as China and India, the assessment of placing a design team closer to target market will provide strategic advantage. This is due to the fact that design teams are more culturally aware of certain elements that immediately impact design and ultimately maintaining strategic competitive advantage in the target market. The interviews conducted in this study also showed that (70%) of interviewees showed an interest in accessing larger market share in China and India. Interviews suggest that more organizations are interested in targeting wider market in the countries they outsource at. The third step is largely concerned with the short-term and long-term cost of research and development. Here organizations are required to carefully assess capabilities, setup cost, social cost, technology transfer cost, and other unforeseeable costs. The objective here is that with each stage in the assessment process, long-term competitive advantage must be the primary objective. Long-term competitive advantage may be in the form of accessing larger pool of experts at a lower cost, access to new markets, increasing current market share, cost reduction, and other elements of strategic importance to organizations.

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