Chapter XVI

Real Option Appraisal in R&D Outsourcing

Qing Cao, University of Missouri - Kansas City, USA

Karyl B. Leggio, University of Missouri - Kansas City, USA

Abstract

This chapter will stress MIS’ strides in R&D outsourcing, and it will also detail the risks and uncertainty associated with the process of outsourcing core areas of the business such as R&D. Moreover, the chapter will propose the use of real option analysis to assist in the decisions of: “Why should a firm outsource R&D?” and “How does a company select a viable vendor using a two-stage process?” The purposes of this chapter include: a discussion of the cutting edge usage of outsourcing for R&D; and, to alleviate the R&D outsourcing risks, we will explore the two-stage vendor selection approach in information technology outsourcing using real options analysis.
Introduction

What began as a means of having routine processes completed by those external to the firm, has exploded into an industry that is on the frontier of product design and innovation. We are speaking, of course, of outsourcing, the reason for many corporate restructurings thus far in the 21st century. There does not appear to be abatement in this trend. Outsourcing offers firms the ability, in the face of limited resources, to attract specialized talent to rapidly solve a business issue. And, by outsourcing to several firms simultaneously, corporations are able to mitigate the risk of exposure to project failure by insourcing or single outsourcing.

Outsourcing offers a firm flexibility. By purchasing specialized knowledge through outsourcing agreements, firms no longer have to deploy internal resources to solve an array of problems. As circumstances change, firms that outsource have the ability to adjust and pursue different opportunities rapidly. In essence, outsourcing is a real option the firm acquires and exercises as warranted. This is particularly true in the area of R&D.

Rather than building an internal R&D program with the knowledge base to tackle a disparate series of issues, the firm can contract with external organizations with specialized research expertise. A technology manager study found that 90% of those surveyed expected to be involved in R&D partnerships within the next three years (Higginbotham, 1997). Additionally, the firm has the ability to hire two or more independent firms to address a business issue. At points in time during the development project, the firm can decide to continue to fund two independent firms working to solve a business problem or, if one firm appears to be progressing more rapidly, efficiently, and profitably towards a solution, can opt instead to fund only one firm to complete the project. This flexibility can often lead to a more rapid solution since the firm does not need to wait for one company to fail to develop a product before partnering with a second firm.

Outsourcing accounts for more than 20% of drug development expenditures (Malek, 2000). Consider a pharmaceutical firm. Rather than building an R&D department to solve a wealth of medical issues, the firm can outsource. For instance, the pharmaceutical firm may have no expertise in finding relief for arthritis sufferers. Rather than hiring researchers and building a lab, the firm can outsource to a research lab that specializes in arthritis research. Alternatively, the firm can hire two research labs to work independently on discovering new products for arthritis sufferers. At a predesignated point during the drug development process, the firm can then determine the success of each outsourcing firms’ research and determine which outsourcing firm should continue to be funded. The same concept can be applied to the outsourcing of information technology research and development.
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