

Taking Advantage of R&D Offshoring beyond Innovation

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Abstract

Globalization, technological advances and the demands of international competition have driven firms to develop activities in their value chains abroad. Although this phenomenon —known as offshoring— is not new, it has undeniably gained in importance over the last decade. And the scope, degree and motivations for international disaggregation of business activities have evolved significantly. Offshoring has become an important strategic option for firms, one that in recent years has included value-added activities such as research and development (R&D). We expand on the managerial implications of research that examines how different governance modes of international R&D sourcing —captive offshoring and offshore outsourcing— contribute to innovation and growth. Using contemporary examples for illustration, we make recommendations on R&D offshoring strategies that boost innovation and enable small and medium-sized enterprises (SMEs) to increase sales.

Offshoring: Looking overseas to boost firm competitiveness

Offshoring strategies present opportunities for firms to gain access to resources in different countries —often in better conditions than those available in their domestic markets. Some years ago these international strategies were seen as being more typical of multi-national and large firms. General Electric (GE) provides a good example of this. In the 1990s GE pioneered the offshoring of services, setting up one of the first captive (or fully owned) offshore service centers in Gurgaon (India) in 1997. Up until 2012 around half of GE's information-technology work was being done outside the company, mostly in India.¹ Today, however, offshoring strategies are

accessible and common among firms of all sizes and types.² More and more SMEs are turning to international markets in search of inputs from all around the world.^{3,4} For instance, in 2005 ET Water Systems—a Californian start-up specializing in sophisticated irrigation devices—decided to begin manufacturing in China.⁵ Or Posse.com, whose chief executive and founder, Rebekah Campbell, chose from an early stage to incorporate various offshoring activities—ranging from hiring engineers in India to build the product to sending phone sales to a local call center in the Philippines—in the project to develop the firm's App, thereby cutting costs and increasing capacity.⁶ It is, therefore, now common to find firms that perform activities in the value-chain abroad in order to take advantage of location advantages, a state of affairs that was unthinkable some years ago.

While firms initially began offshoring to take advantage of reduced costs in less developed countries, they now scour the world for high-value resources that will enable them to maintain or improve their competitiveness.⁷ Firms today, then, offshore their activities in search of different strategic advantages related to cost cutting, efficiency gains, access to better quality resources and even new markets.⁸

Do governance modes of offshoring really matter?

When a firm opts for offshoring, it must consider how it will organize the activity overseas. The firm needs to decide between captive centers (captive offshoring or offshore insourcing) and a sub-contracting agreement (offshore outsourcing)—the 'Make' or 'Buy' decision. Most academic studies identify these two governance modes. Some papers, however, recognize that a third option may exist, a collaborative alternative halfway between captive offshoring and offshore outsourcing.⁹

A closer examination of captive offshoring and offshore outsourcing reveals that the strategic advantages of offshoring (cost reductions, efficiency gains, resource enhancement, and market opportunities) vary depending on the governance mode. Firms, therefore, must have information on what advantages each governance mode may bring.

Firms should weigh the risks and benefits of each mode, carefully looking for the best fit with their characteristics and in particular their strategic objectives. In general terms, offshore outsourcing is closely related to cost cutting, efficiency and flexibility gains, the exploitation of providers' advantages, faster speed to market, and the development of new products, among others. Offshore outsourcing, then, delivers advantages linked to externalization. This governance mode is not free of risk, however. Indeed, the reasons for choosing captive governance modes typically have to do with minimizing the risks inherent in offshore outsourcing, risks related to

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negotiation and appropriability problems, leakage of information, opportunistic behavior, over-reliance on suppliers or loss of firm capacities, among others. Thus, the disadvantages and greater costs generated by captive centers are analogous to the advantages of offshore outsourcing.¹⁰

Offshore outsourcing is usually seen as the most accessible governance mode for SMEs, firms generally characterized by possessing limited resources. In contrast, captive offshoring has been regarded as the preserve of large firms. Despite this, studies by Roza, van Den Bosch and Volberda, and Rodríguez and Nieto show that firm size does not determine governance mode, as SMEs can be found that perform offshoring activities via both governance modes.^{11, 12}

Implications of R&D offshoring: innovation and sales growth

The offshoring of added-value activities such as R&D has become an important strategic option in recent years. The growing availability of high-quality scientists and engineers in globally disperse locations presents firms with the opportunity to draw upon a qualified and talented workforce instead of relying solely on national resources.¹³

A noteworthy passage in Walter Isaacson's 2011 biography of Steve Jobs reporting a conversation between the Apple CEO and US President Barack Obama reinforces this point:

Apple had 700,000 factory workers employed in China, he [Jobs] said, and that was because it needed 30,000 engineers on-site to support those workers. "You can't find that many in America to hire," he said. These factory engineers did not have to be Ph.D.s or geniuses; they simply needed to have basic engineering skills for manufacturing. Tech schools, community colleges, or trade schools could train them. "If you could educate those engineers," he said, "we could move more manufacturing plants here."¹⁴

It is important to note that these current strategies of offshoring knowledge-based activities are open to any firm, regardless of its size. Posse.com provides a good example of how a firm can gain access to a qualified and talented workforce at a competitive price. This small firm grew quickly after its foundation thanks to offshoring strategies in countries like the Philippines, where it assembled a qualified team composed of developers, telemarketers, a graphic designer, a database manager, an assistant community manager, an accountant and a manager. This strategy boosted the firm's innovativeness and sales, thereby ultimately making the firm more competitive.

R&D offshoring is an effective way for firms to improve innovation performance. Previous research reveals a positive relation between R&D offshoring and innovation.^{15, 16} Nieto and Rodríguez, using a large sample of Spanish manufacturing and service firms, conclude that both governance modes—captive offshoring and offshore outsourcing— exert a positive impact on innovation performance; this study finds that this impact is higher for product innovations, with captive offshoring producing the greatest effect.¹⁷ For their part, Bertrand and Mol compare R&D offshore outsourcing with R&D national outsourcing for a sample of French firms, concluding that firms that perform offshore outsourcing achieve more product innovations than those that outsource in the home country.¹⁸ A good example of the relation between R&D offshoring and product innovations is Intel. In 2007, Intel's Bangalore Development Center contributed about half of the work towards its "teraflop research chip"; and one year later, Intel unveiled its first microprocessor designed entirely in India. This was the first time that 45 nanometer technology was designed outside of the United States.¹⁹

And firms looking to grow gain more than they lose by strategically locating R&D activities abroad. This is the main finding of the Rodríguez and Nieto study, which analyzes different governance modes of R&D offshoring in SMEs.²⁰ The results of this study lead the authors to conclude that the decision to offshore R&D activities through arm's length relationships with independent foreign suppliers or through affiliates abroad has important strategic implications. Specifically, captive offshoring positively affects sales growth via the achievement of innovations, while R&D offshore outsourcing positively affects sales growth both directly and indirectly (i.e., regardless of whether innovation results are achieved or not). This analysis reveals the different contributions of each governance mode to sales growth and the mediating role of innovation in the relation between R&D offshoring and firm growth. These findings are especially relevant for SMEs, which may see international R&D sources as an attractive strategy to overcome their limited resources, particularly in terms of R&D investment.

So what?

R&D offshoring strategies present challenges and opportunities for firms looking to increase their innovative capacities and sales. For firms in search of innovation, captive offshoring is the most attractive option because it allows them to acquire better inputs in advantageous conditions, while minimizing the risks of information leaks and opportunistic behavior that exist with offshore outsourcing.²¹ If, however, the firm's strategic objective is sales growth, managers should be aware that captive offshoring and offshore outsourcing make different contributions to this goal. Therefore, managers

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of SMEs focused on growth should bear two key ideas in mind when designing international R&D sourcing strategies. First, captive R&D offshoring contributes to sales growth insofar as SMEs achieve innovation results; and second, offshore R&D outsourcing contributes to sales growth both directly and indirectly (via innovation).²²

Although both strategies bring benefits to firms in terms of innovation and growth, managers must carefully weigh up the risks inherent to each governance mode. It is important to remember that offshore R&D outsourcing strategies can bring potential problems, such as those related to long-term internal risks (e.g., hollowing-out) or those associated with outsourcing partners (e.g., the danger that they will become future competitors). In addition, managers opting for captive R&D offshoring must take into account factors such as labor costs, high-demand variance, expensive capital goods requiring scale, or the need to deal with local institutions and the requirements of doing business in the sourcing country.

Conclusions

In conclusion, R&D offshoring is an attractive option to stimulate innovation and growth. Despite the complexity of offshoring knowledge-based activities, firms can reap significant benefits through intra- and inter-firm sourcing of international R&D. Specifically in the case of SMEs, offshore R&D outsourcing positively affects the growth of sales both directly and indirectly (via innovation). For its part, captive offshoring only exerts an indirect effect via the achievement of innovations, which in turn contributes to firm growth insofar as these innovations enable SMEs to increase sales.

Consequently, managers of SMEs should consider R&D offshoring as a way of improving innovation performance and increasing sales. These managers need to take advantage of the benefits that each governance mode offers to SMEs in order to make their firms more competitive.

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