

Essay :

There is a trend in some industries towards de-integration – companies hiving off or outsourcing activities previously carried out in-house. What are the causes of this trend and how has it affected, or is likely to affect, the pharmaceutical industry?

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“Vertical disintegration and specialisation is perhaps the most significant organisational development of the 1990s”

Langlois, The vanishing hand

Introduction

Organisations change when their environments change. Fundamentally, this involves changes in technologies, as well as quality of accumulated knowledge in the firm (Milgrom and Roberts 1992). For the last two decades, globalisation has led to tremendous shifts in business environment. As a result, many firms and even whole industries have significantly altered their make-or-buy decisions. In the first part of this paper major theoretical frameworks of de-integration will be introduced. In the second part, these frameworks will be applied to analyse the causes of de-integration. Further, trends in pharmaceutical industry in particular will be discussed. Finally, this paper will refer in short to some difficulties with outsourcing, and will touch on possible alternatives for firm design.

Theoretical frameworks of de-integration

Make-or-buy is the decision of a firm to perform an activity itself (in-house) or purchase it from independent firms (outsourcing or de-integration) in the market (Besanko et al. 2000). In essence, it is a decision about vertical boundaries of the firm, and can be determined by assessing the costs and benefits of both alternatives. Generally, unless the firm has some special competence in carrying out the supply activity, others are likely able to do the job better and more cheaply (Roberts 2004). To give the statement a theoretical ground it will be useful to look at the leading approaches to analysing vertical boundaries of a firm. Among others are early developments by Coase (1937), framework of transaction cost economics (i.e. TCE) by Williamson (1975, 1985), more recent resource-based view (i.e. RBV) approach¹ by numerous contemporary authors, specifically by Grant (1991)². Both TCE and RBV refer to vertical boundaries of the firm

¹ The RBV helps to distinguish core competences and provides knowledge about which activities must be outsourced (Espino-Rodriguez et al., 2006).

² “Grant (1991) states that any lack of resources can be made up by purchases or strategic alliances, and outsourcing is one way of complementing the firm’s resources and capabilities by helping to improve the firm’s strategy to make

depending on possession of specialised assets. However, TCE focuses on the nature of transactions to attain those assets, whereas RBV focuses on firm's resources and capabilities as a centre of the analysis. In short the decision to outsource services or business processes will depend on the strategic value of the resources that constitute them. The strategic value of resources, in turn, will depend on quality of those. The resources that are valuable, rare, imperfectly imitable and non-substitutable seem to be constituting firm's competitive advantage (Barney 1991). Consequently, the capabilities that they build will be core competencies, and those should not be outsourced, but rather kept in-house (Quinn 1999).

Among others is the very recent 'vanishing-hand' framework developed by Langlois (2003), which looks at the factors like complexity of technological process of production, as well as "thickness of markets", meaning population, income, political and other factors, all in relation to vertical boundaries of the firm. Finally there is a practical framework developed by Burt et al (2003), which incorporates the major variables from the past approaches and tries to create a rule of thumb for outsourcing. Key characteristics of mentioned models are summarized in appendix 1.

Further in this paper some of these theoretical frameworks will be applied to analysing current trends towards de-integration.

Causes of de-integration analysed using the frameworks

Causes of de-integration are various. Fundamentally, most of them are associated with increased globalisation of markets in recent two decades. Following are the most significant ones.

Firstly, one of the major changes is the exceptional speed with which information and commodities move around the globe. More specifically, the emergence of computers and telecommunication, as management and production tools in 1980s, increased coordination within and outside the firms. In essence, this trend reduces cost advantages of large, vertically integrated firms and creates opportunities for smaller firms to collaborate with market firms. From TCE viewpoint, development of communication seems to bring lower uncertainty to the market, and better monitoring mechanisms to

better use of its capabilities when faced with external opportunities"; Espino-Rodriguez et al., 2006, "A review of outsourcing from the resource-based view of the firm", p.54

avoid violation of contracts. Hence, transactions are likely to be less costly to be carried out in the market. Within RBV approach, high speed of information exchange promotes easier imitation and substitution of certain assets. Hence keeping these assets in-house might not be feasible. For example, firms in financial services industry rarely create extensive analytical databases; instead they are using cheaper and more sophisticated financial analysis and trading platforms like Bloomberg.

Second is the record number of technological innovations in the past 20 years. This has led firms to increasingly benefit from low production costs of firms in the market, which use innovations in their processes. Referring to the practical approach of Burt et al. (2003), this means capitalizing on suppliers' exceeding research and know-how. For the small firms, which do not possess the necessary capacity, this trend has created opportunities to use R&D products of other firms as their inputs. According to RBV, these resources are no longer a part of competitive advantage, and will be outsourced: all because of the higher relative cost of producing them internally. From the vanishing hand perspective, development of technology enables to lower the minimum efficient scale of production: "urgency of buffering" declines, and the firm benefits from outsourcing activities. For example, the vast majority of firms are outsourcing development and maintenance of the internet shopping on their websites, which is a product of innovation in internet technology.

Third is the trend of de-regulation and liberalization in developing and developed countries. These have contributed to extensive outsourcing, and specifically to off-shoring worldwide. With regard to vanishing hand hypothesis, de-regulation has increased thickness of markets through broader reach. Additionally, it has obviously provided low-cost production opportunities in the countries with cheaper labour force. For example, world's clothes manufacturing is heavily outsourced to China, thanks to the increased openness of Chinese economy to international trade.

Fourth are increased competition and demanding capital markets, which have led firms to consider more cost-effective organisation in attempts to survive intense competition. Indeed, cost is one of the critical variables in make-or-buy decisions, and all of the above approaches include this variable in the basis of their analysis. Particularly, it can be concluded that firms should outsource processes that are more costly to produce in-house.

All of the discussed trends have created new opportunities for firms to capitalize on numerous advantages of de-integration, i.e. reduced organisational complexity, reduced agency costs, more flexibility in production planning, exploiting scale and learning economies of the firms in the market, etc. (Besanko 2000, Roberts 2004).

There are a number of industries, which have successfully adopted the trend of de-integration. Examples include motor industry, computer industry, telecommunications, financial services industry, sports equipment and fashion industries, as well as most notably pharmaceutical industry.

Trends in pharmaceutical industry

The global pharmaceutical industry is, indeed, one of the richest and most innovative in the world with revenues of approximately \$420 billion in 2003.³ And although, historically, the pharmaceutical industry has been slower than other industries to embrace outsourcing, the latter is quickly becoming its essential component nowadays.⁴

An important specificity of the pharmaceutical industry is that the lifeblood of the industry flows from its research and development activities. Today the industry is increasingly outsourcing/off-shoring its R&D; the fact that apparently contradicts RBV approach regarding keeping core competencies in-house. In reality, the revolutionary advances in biotechnology have enabled pharmaceuticals to use it as a research tool and to actually enhance their competence by outsourcing (Henderson et al. 1999).

Another specificity of pharmaceutical industry is the importance and the use of Intellectual Property Rights (IPR) to exploit and protect innovations. It is an extremely knowledge-intensive and human capital driven area.

Comparing with car manufacturing, for example, one could see similarity in their concentrated R&D, as well as usage of IPR. The difference though is that, because the core production in pharmaceuticals is based entirely on R&D, it will have to outsource particularly these activities or ones related to them, when it actually does make a decision to contract in the market. Whereas, in car manufacturing there are plenty of core

³Pharmaceutical Research and Manufacturers of America (PhRMA). "The 2003 Pharmaceutical Industry Profile." Washington, DC: PhRMA, 2003.

⁴ Berens, J. and J. McCoy, (2005). "Offshoring in the global pharmaceutical industry: Drivers and trends", p. 41

processes that the manufacturers can “buy” in the market and may therefore keep R&D in-house.

Returning back to the causes of de-integration, it is worth mentioning that the turning point in pharmaceutical industry were developments in 1990s. Particularly, five of them can be distinguished:

- competition from biotech firms;
- pressure for lower prices in the market;
- patent expiry;
- decline in R&D productivity in the industry;
- and decline in shareholders returns.

Competition from biotech firms and lower prices in the market have, indeed, suggested that pharmaceuticals should search for means to improve productivity of their production and be able to reach lower costs. Also the advantages in the form of existing patents, that firms enjoyed, have largely come to an end. Hence in order for pharmaceuticals to enhance their competitive ability, they need new developments and strictly lower costs.

Firms in pharmaceutical industry seem to have met the challenge with various structural and operational changes. Among others are general reorganisation of research and development, alliances with biotech firms, diversification and last but not the least outsourcing/off-shoring. And with outsourcing there is clearly one question that the firms ask; “Should the R&D be outsourced?”

It could be argued that high R&D costs have favoured large firms⁵, and there is a rationale therefore to keep these processes in-house. A glimpse on the pharmaceuticals in 1990s will reveal that really there have been very few newcomers, and there was (and to some extent still is) a tendency for consolidation to exploit economies of scale (Besanko 2000). On the other hand, smaller firms are increasingly benefiting from cost advantages in emerging markets (especially India for pharmaceutical industry) and are able to avoid inefficiencies of large size (i.e. higher labour costs, bureaucracy, duplication of operations, etc).

⁵ Thomas, L.G. (1990). “Regulation and Firm Size: FDA Impacts on Innovation”. RAND Journal of Economics.

Alternatives

Based on the above, it may seem that the trend of vertical de-integration in many industries is irreversible. And although the benefits of outsourcing in certain situations are indeed indisputable, it does not however mean that outsourcing is an elixir (Williamson 2008). Major possible drawbacks of outsourcing are “hold-up” problem, quality management and reputation issues, lack of process control and many more. In fact a recent Deloitte Consulting survey of 25 world-class firms found that many companies faced higher costs than anticipated, because of unexpected complexity, lack of flexibility and other unforeseen problems associated with outsourcing transactions. As a result, 25% of those transactions were brought back in-house: in other words they were “backsourced” (Tadelis 2007).

Moreover, in the recent structural transformations, firms seem to be creating a new type of organisation, which is regarded as “hybrid” or “networked” organisation (DiMaggio 2001). According to Powell (1990) the firms will be organized as “neither market nor hierarchy”. These developments, however, go beyond the scope of this paper.

Conclusion

According to Besanko et al. (2000), the firms have increasingly become less vertically integrated, focusing instead on core business activities. This trend is driven by globalisation, specifically by the speed of information flow, increased number of technological innovations, de-regulation and liberalisation of markets, and finally increased demand and competition in the market. One of the industries shifting to the new form of firm design, is pharmaceutical industry. The reasons for such transformation are competition from biotech firms, pressure for lower prices, patents expiry and decline in R&D productivity in the industry. Nevertheless, outsourcing does not seem to be indisputable. Fundamentally, the make-or-buy decision should be preceded by a serious cost-benefit analysis between producing in-house and outsourcing. Consequently, there seems to be a continuing balance between in-house and market production, and vertical integration seems to be still relevant.

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Appendix 1 Outsourcing frameworks

a) Framework of Transaction Cost Economics by O. Williamson

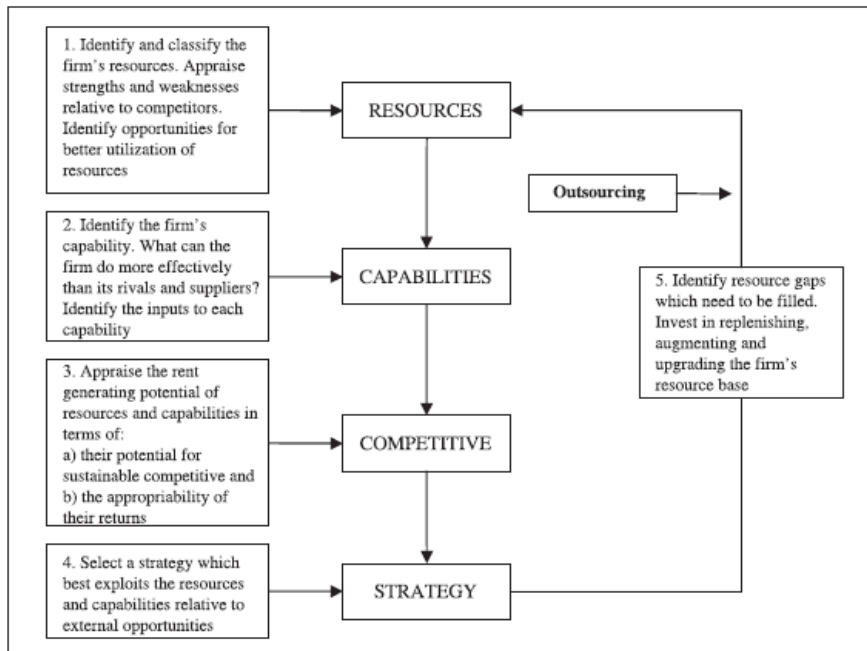
The key variables, which the author identifies as determinants of to firm's vertical boundaries, are *frequency* of transactions, *uncertainty* and *asset specificity*.

		<u>Asset specificity</u>	
		<u>Low</u>	<u>High</u>
<u>Uncertainty & measurement problems</u>	<u>Low</u>	Spot market transaction	Contracting Out (long-term) Various Alternatives
	<u>High</u>	Spot market transaction	Contracting Out (long-term) Vertical Integration – Internalisation
		<u>Occasional</u>	<u>Recurrent</u>
<u>Frequency</u>			

Source: Williamson (1985)

b) Framework of Resource-based approach by Gant 1991

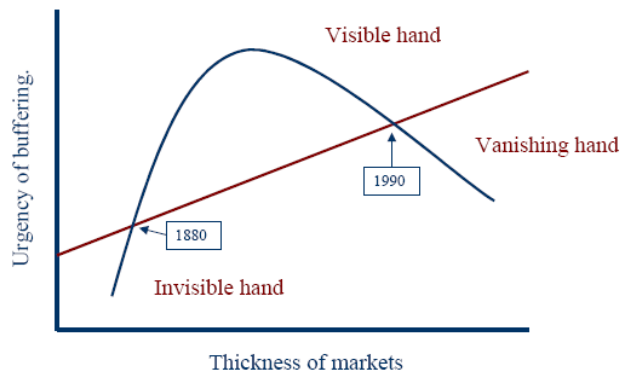
The key variables are level of *specificity of assets* required to obtain *capabilities* and *cost of developing* those capabilities.



Source: Espino-Rodriguez, T.F., V. Radron-Robaina (2006)

c) Framework of vanishing hand by R. Langlois

The key factors that push to increased outsourcing are “thicker markets” (broader reach, richness of interactions and affluence of customers) and “urgency of buffering” or technological complexity of production. The straight line is the boundary of the firm.



Source: Langlois, R.N. (2003)

d) Practical framework by D. Burt et al. (2003)

Factors that favour in-house production	Factors that favour outsourcing
Cost considerations	Cost considerations
Desire to integrate plant operations	Lack of expertise
Unreliable or incompetent suppliers	Suppliers' exceeding research and specialized know-how
Quantity too small to interest a supplier	Small-volume requirements
Better quality control	Limited production facilities or insufficient capacity
Design secrecy , protecting proprietary technology	Desire to maintain a multiple-source policy
Political, social or environmental reasons (union pressure)	Item not essential to the firm's strategy
Emotion (e.g., pride)	Brand preference

Source: Burt, D., D. Dobler and S. Starling (2003)