

A FOUR STAGE MODEL FOR OUTSOURCING RESEARCH & DEVELOPMENT

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INTRODUCTION

Outsourcing, the process of buying in materials or services, is increasingly used to enable businesses to cut costs and concentrate on core activities. Two other factors have contributed to this trend: globalisation and the increased use of information technology (IT).

Research and Development (R&D) is one of the functions most frequently outsourced due to the ever increasing wage levels of specialist staff and rapid technological change.

Many models suggest reasons and rules for outsourcing; supplier selection, how to minimise risk, etc. Most are guidelines for outsourcing general activities such as security, catering and cleaning; other models describe outsourcing IT. However, there are no specific models for outsourcing R&D because of the many complex characteristics that must be taken into account.

McFarlan [1] who introduced the concept of the strategic matrix, produced the nearest applicable model, for positioning Information Systems and Information Technology (IS/IT) products within an organisation.

His strategic matrix is based on the Boston Consulting Group's (BCG) Strategic Investment Analysis; he claims that

all the different types of IS/IT products existing in any given company simultaneously require different management approaches and deliver different benefits. Highly structured projects, those in which the final outputs are clearly defined with little opportunity for redefinition and little or no organisational change involved in their implementation, are ideal candidates for outsourcing. Conversely, large, unstructured projects prove to be very difficult for outsourcing because of co-ordination problems. Unstructured projects are those in which the final outputs and processes are susceptible to significant evolution as the project unfolds.

Although McFarlan's matrix could be adapted to indicate which R&D activities could be outsourced and which should be kept in-house, the model leaves much to be desired. A particular flaw is the need for detailed information on all areas of the project before the matrix can be completed.

THE MODEL

A survey of the literature in this area for example [2] and the results of empirical analysis by the authors suggest that a four-stage model may be more appropriate for outsourcing R&D.

The model is illustrated below. Stage-one (a) shows the perceptions of outsourcing based on a literature search and

THE FOUR-STAGE MODEL	
<p>Stage-one (a): Outsourcing - the theory</p> <ul style="list-style-type: none"> ● Gain access to specialist resources ● Stay ahead of fast changing technologies ● Take advantage of suppliers' core competences ● Enhances flexibility - can adapt quicker to market needs ● Improves long term performance of the company ● Improves competitive position of the company ● May be only viable option for a small company ● Shares risk with supplier ● Improves product quality ● Increases speed of bringing new products to market 	<p>Stage-one (b): Outsourcing - the practice</p> <ul style="list-style-type: none"> ● Suppliers late to deliver ● Poor quality of work ● Failure to stay with the agreed cost ● Contractual disputes ● Small capital-cost savings ● Lack of response when seeking work updates ● Loss of potential cash flows due to inability to diversify product. ● Lack of support after project delivery
<p>Stage-two (a): Favourable conditions</p> <ul style="list-style-type: none"> ● Highly structured projects ● Clearly defined projects ● Measurable milestones ● Clear specifications ● Product / part product already developed can be customised 	<p>Stage-two (b): Unfavourable conditions</p> <ul style="list-style-type: none"> ● Loosely structured projects ● Imprecisely defined projects ● Milestones not measurable ● Ill defined/changing specifications ● Troublesome projects ● Low activity levels ● Design is iterative (ie by trial and error) ● Lack of supplier management
<p>Stage-three: Supplier Selection</p> <ul style="list-style-type: none"> ● Price ● Previous record of accomplishment in the area of the activity ● Skill sets of people who will be working on the project. ● References from previous clients ● Must be financially sound or underwritten by parent company 	
<p>Stage-four - Outsourcing Matrix</p> <ul style="list-style-type: none"> ● In-House capability ● In-House cost ● Outsourced cost ● Record of meeting deadlines ● Record of meeting costs ● Skill sets ● References 	

stage-one (b) shows the realities of outsourcing based on the results of the empirical analysis.

Stage-two (a); based on the literature search and survey analysis, indicates when an activity could be classified as suitable for outsourcing with a minimum of risk. Stage-two (b) indicates those activities that should only be classified as suitable for outsourcing in the absence of any alternatives, ie. if they were outsourced then there would be a significant increase in risk. The factors derived from the literature search and survey are listed horizontally.

Stage-three presents an improved set of supplier selection criteria based on the survey results.

Stage-four shows the factors necessary for successful outsourcing. An outsourcing matrix for stage-four can be quantified by allocating weights to each of the factors. A separate matrix is completed for all potential suppliers allowing them to be individually assessed and rated. To simplify the decision making process in-house development is rated in the same fashion. The costs and weighted results can be compared and a sensible choice of supplier made.

Although the matrix was developed within the consumer electronics industry, it has the potential for use in virtually any sector that outsources. The weightings originally developed for the model must remain company confidential, however other companies/sectors may find different weightings more appropriate. Companies wanting to use the model are advised to try a range of weightings tailored to meet their own circumstances.

Any supplier with a positive score can be considered a suitable candidate, those with a negative score should be discarded. The rating provides an approximate measure of potential risk. The supplier with the highest rating is not necessarily the optimal choice, additional factors need to be considered. For example, if highest quality is required, greater weighting will be given to those factors concerned with quality. If cost is the prime motivator, then the cheapest candidate with a positive score will be chosen. Other sets of criteria may be used with some degree of confidence and contingency plans can be made by considering other suppliers with similar scores.

REFERENCES

- [1] McFarlan, F.W., "Information Technology Changes the Way You Compete", *Harvard Business Review*, May-June, 1984.
- [2] Bowman, C., "The Essence of Strategic Marketing", International Text Book Company, London, 1993.

About the authors

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