

The fit between business strategy and R&D organisation

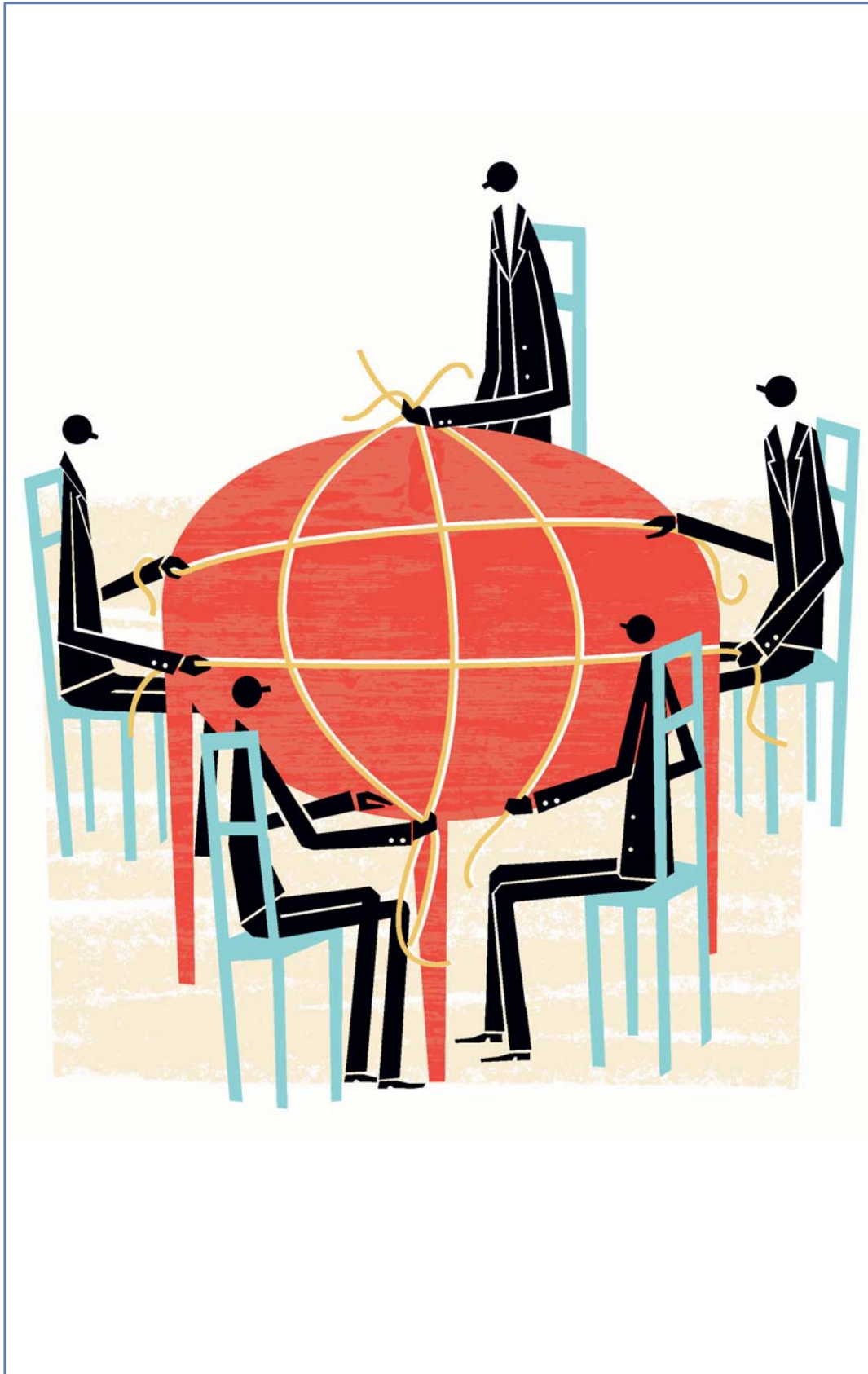
Ben Thuriaux-Alemán, Nick Toone, Paul Eccles and Stefan Lippautz

Corporations constantly struggle to get the right fit in their R&D organisation. It should neither be too global nor too focused, and at the same time it must fit into the company's overall strategy. It's a combination that can be hard for managers to come to grips with. This article shares the insights from a study undertaken by Arthur D. Little of the link between business strategy and R&D organisation and shows through a concrete example how these insights can be applied.

Suppose you were the CEO of a € 6 billion company, with five business units, seven major product lines and seven R&D centres spread across 23 countries. Imagine also you had a magic wand with which you could transform – with one painless movement – the organisational set-up of your R&D activities into one that would fit perfectly with your business strategy. Solved would be such questions as: which R&D activities to do centrally and which de-centrally; which development centres to equip with the full breadth of capabilities and which to turn into focused centres of excellence; and where to stimulate local innovation entrepreneurship and where to demand strong corporate control.

It is a wonderful thought, as in most large companies the organisational set-up of R&D is of bewildering complexity indeed. Typically it has evolved over time through a combination of disparate business unit actions, head office initiatives and acquisitions. Senior executives constantly struggle with this legacy of complexity and with the misfit between their business strategy and the organisational set-up of their R&D activities.

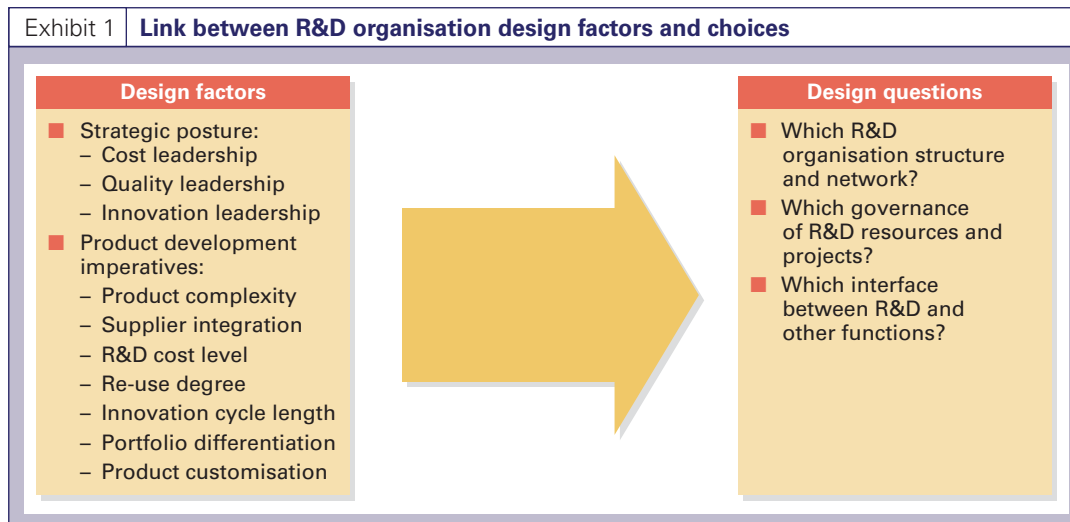
While we cannot offer you the magic wand, we can share with you the insights from a study we undertook recently of the link between business strategy and R&D organisation. The study reveals which organisational set-up of R&D is best suited for a given business strategy. Since tabula rasa is rarely an option in business, you may not be able to put in place that “best” set-up fully or immediately. But the study results at least offer a standard that you can use as a point of reference. You can work toward the standard or try to approximate it as closely as possible, given the numerous historic constraints you face and the ever-changing environment in which you operate. In short, the study results are a diagnostic tool capable of pinpointing areas where you can improve the organisational set-up of your global R&D activities.



In this article, we will first summarise the set-up and key findings from the study. We will then illustrate the application of the study findings with a concrete example, and conclude with a set of recommendations.

Study set-up and findings

First we carried out a comprehensive review of the recent research literature on the state of the art in the organisation of R&D. From that review we distilled findings about the factors that determine how one should set up the R&D organisation (see Exhibit 1).



Design questions to be answered

The wealth of choices that senior executives of global companies have to make when designing the organisational set-up of their R&D activities can be clustered into three categories:

- R&D organisation structure and network: how many R&D centres should we have, should they be located centrally or within the business units, which reporting lines should exist, and what range of capabilities should each of the R&D centres have?
- Governance of R&D resources and projects: who owns and allocates R&D resources and budgets, and how is

project management responsibility interwoven with the company's operational line of command?

- Interface between R&D and other functions: how closely integrated should the R&D function be with marketing, manufacturing and procurement?

Design factors

The multitude of factors that senior executives have to consider when making a choice for the design of their R&D organisation can be clustered into two categories and 10 sub-categories:

- Strategic posture: are we striving for cost leadership, quality leadership or innovation leadership?
- Product development imperatives, as defined by:
 - How complex are our products from a development perspective? For example, are we developing a new class of aeroplane, with enormous complexity in terms of interaction between components and development in multiple locations around the world, or are we working on relatively simple products such as a new steam trap?
 - How important is it to integrate suppliers in the development process?
 - What is the share of R&D cost in total product cost?
 - What is the target for the degree of re-use of concepts, modules and components across products?
 - How important is it to achieve short product-renewal cycles in our business?
 - How important is it to have brand differentiation and multiple product variants in the product portfolio?
 - What degree of product customisation do we offer to our customers?

The multitude of factors that senior executives have to consider when making a choice for the design of their R&D organisation can be clustered into two categories and 10 sub-categories.

Link between design factors and design questions

The answers to the questions about design factors dictate the answers to the design questions. In other words, on the basis of the literature reviewed and our field experience, we were able to determine which R&D organisation design fits best with a given strategic posture and set of product development imperatives. We captured these “best fit” links into a model that suggests the most appropriate organisational set-up of R&D activities as a function of the company’s strategic posture and set of product development imperatives.

For example, if your strategic posture emphasises innovation leadership, the model states that you will benefit most from a set-up in which R&D centres are decentralised and reporting to the business units, with a wide range of technical capabilities in each R&D centre. When, in addition, your products are highly complex, you will benefit from separating research from development, and integrating development and manufacturing.

Once the model was completed, we conducted an in-depth survey of 68 global companies in assembled products industries, such as automotive, electronics and consumer durables. The survey had a dual purpose. First, and most importantly, we wanted to determine the prevalence of misfits between business strategy and R&D organisation. At each of the surveyed companies, we identified their strategic posture, product development imperatives and R&D organisation design choices. We then compared these design choices with the design that our model had suggested as “best.” We found that in over half of the companies in the sample the R&D organisation design adopted by them deviated significantly from the suggestions made by our model. These deviations hint at important opportunities for optimising the R&D organisation design.

The second purpose of the survey was to validate and refine the model based on current real-world best practice. In order to make sure that the model was not flawed (i.e. that poor fit between business strategy and organisation of R&D was not the result of the model variables

On the basis of the literature reviewed and our field experience, we were able to determine which R&D organisation design fits best with a given strategic posture and set of product development imperatives.

About the study

The study started with a comprehensive review of the research literature. Working with the Technical University of Berlin, we scanned the existing literature and analysed more than 235 research papers and documents that identified generic best practices for the organisation of R&D. This review led to a model establishing “best fit” relationships between a company’s strategic posture and product development imperatives on the one hand, and design choices for the company’s R&D organisation on the other.

We then interviewed 68 companies based in Europe, the US, Japan and South East Asia. They were spread across the following industries: automotive OEMs and suppliers (56 %), electronics (12 %), aerospace and defence (12 %), and consumer durables and other manufacturing (20 %). In terms of size, they had sales of less than € 500 million (10 %), € 500 million to € 1 billion (14 %), € 1 to 5 billion (40 %), € 5 to € 20 billion (26 %) and more than € 20 billion (10 %).

The interviews took place between September 2005 and March 2006. The interviewees were usually the heads of engineering, research or product development. The interviewees answered questions that enabled us to determine their strategic posture, product development imperatives and R&D organisation design choices. We compared their current R&D organisation design choices with those that would have been “best” according to our model. We found that there was a significant misfit and thus potential for optimisation at 59 percent of the companies surveyed. We identified three common causes of a misfit:

- The design of an R&D organisation most often is a matter of evolution of R&D capabilities. Existing structures evolve over time as a result of pragmatic growth or an acquisition without a proper post-merger integration process for the R&D function. This often leads to a proliferation of sites and capabilities.
- In other cases, a change in leadership of the R&D function leads to significant changes in the R&D organisation yet without an obvious increase of its fit with the business strategy.
- Another key problem is that valuable technological competencies are gradually developed in a location that is isolated from the practical needs of the business, eventually resulting in an “ivory tower” disconnected from business strategy.

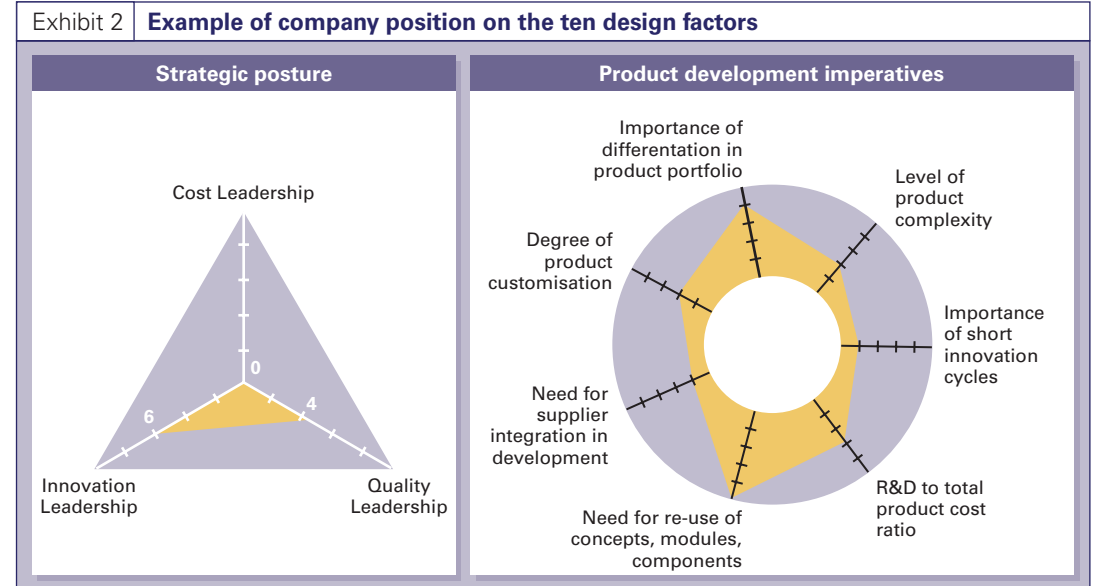
being misspecified), we subsequently validated the results of the model and the suggestions for improvements with over half of the interviewees. This did not identify any basic flaws in the model.

It would take us far too long to go into the details of the model within the frame of this article. However, we will illustrate its usefulness by describing how we applied it at one particular company.

An example of a “best fit” assessment

We will illustrate the use of the study results in the case of a company that develops and supplies fluid control equipment, primarily to industrial markets. Products range from components and spares to the development of bespoke solutions. Customers’ requirements are often driven by a desire to reduce energy costs, while maximizing up-time. Fluid systems often also have safety requirements and are subject to the associated regulations. Against this background, the company has chosen a strategy that focuses primarily on quality and secondly on innovation leadership. It has no intention to compete based on cost. Re-use of concepts, modules and components is viewed as fairly important to ensure a consistently high-quality approach. In addition, it places strong emphasis on creating a differentiated product portfolio. Engineering teams are mainly based in Europe and North America, with small teams in China and India expected to grow significantly over the next five years, thus increasing organisational complexity. Exhibit 2 shows a summary of how the company is positioned on the 10 design factors explained previously (three related to strategic posture and seven related to product development imperatives).

The second purpose of the survey was to validate and refine the model based on current real-world best practice.



When we look to the “best fit” model for what the R&D organisation for this company should look like, and compare that with its actual R&D organisation, we find both a number of good fits and some areas for improvement:

- There is good alignment with the company’s focus on innovation leadership. The company manages the critical functional interfaces well. Research is separated from development, which increases innovative output and the chances of developing step changes as opposed to creating incremental improvements. Styling and ergonomic factors are integrated early into product development, which ensures that the potential for differentiation is considered early on. This is a well-established best practice for manufacturing industries, but our interviews suggest that it is done relatively infrequently in other companies.
- The company’s governance of R&D is appropriate. Planning of engineering is centralised, which ensures that there are strong measures to re-use standardised concepts and components, even as the product range increases and differentiates. Similarly, the mixture of budget allocation between programme and line functions promotes system re-use.

The R&D organisation design will depend on the historic constraints that prevail and the ever-changing environment in which the company operates.

- The company currently assigns full responsibility to the R&D project managers. While a matrix approach is rarely appropriate, in this particular instance it would help create a better balance between meeting market needs and concept re-use.
- The company could improve its operational structure. By integrating purchasing with the engineering and manufacturing organisation, it would ensure that component cost can be minimised and that engineering adopts “design for manufacture” approaches to reduce product cost. This general best-practice recommendation would be even more important if the company had chosen to adopt a cost leadership strategy.
- The company is currently handling product management through a committee. In order to improve life-cycle management and control the complexity resulting from product proliferation, it would benefit from appointing a single product manager with full accountability for monitoring products throughout their life-cycle.

The above list of improvements also demonstrates that we are not advocating the blind application of the outcome of the “best fit” model. The model is not normative – it provides, so to speak, a “default” solution for the organisational set-up of the company’s R&D activities. The R&D organisation design will depend on the historic constraints that prevail and the ever-changing environment in which the company operates.

Likewise, there is no one-size-fits-all solution. For example, the increasing cost of R&D leads to the growing use of a set-up with “centres of excellence”, in which each centre specialises in a specific set of capabilities, thus benefiting from efficiency gains and leverage effects. This set-up was the most frequent design choice of most of our study participants. Nevertheless, one company in a rapidly changing market chose not to adopt this set-up for two reasons. Firstly, it needed a range of capabilities in each market in order to meet very strong local demand. Secondly, it wanted to achieve much shorter product development times through the application of concurrent engineering approaches.

Insights for the executive

Senior executives redesigning the organisational structure of their R&D activities aim at optimising the trade-offs between proximity to market, access to talent, economies of scale and strategic control. While seeking this optimal design, they face a bewildering array of design decisions and of factors pushing for one choice or another.

There is no one-size-fits-all solution. But our “best fit” model provides a guidepost in that endeavour: it indicates which R&D organisation design fits best with the company’s business strategy. Our study reveals there is a great need for such a guidepost. At over half of the firms in our study, we found a disconnect between business strategy and R&D organisation design.

Whenever there is a discrepancy between the design the model suggests and the company’s current design, senior executives with whom we work can ask themselves: are there valid reasons specific to my company and the environment in which it operates to justify the discrepancy? Or are obsolete or otherwise flawed reasons leading us to forgo an opportunity to make our R&D activities more effective?

Generally, firms should be attentive to the following three situations:

- Have we recently acquired a company but neglected to properly address the R&D function in the post-merger integration phase? Are we thus being saddled with a proliferation of R&D sites and capabilities that do not serve our business strategy well?
- Has there been a change in leadership of the R&D function recently? And has the new leader enacted significant changes in his or her R&D organisation, yet without an obvious increase in the fit with the company’s business strategy?
- Are there any centres that have “abused” their reputation for R&D excellence to gradually drift away from

the customer-facing side of the business? Have they become ivory towers disconnected from our business strategy?

Whatever the reasons for the misfit between business strategy and R&D organisation, there is now a “best fit” standard that can help structure an initial reflection on R&D strategy and which may provide suggestions for redesigning your global R&D organisation into one that enables you to stay competitive in the worldwide product race.

This article builds on Arthur D. Little’s paper and presentation to the EuroMOT conference at Aston Business School in 2006, which presents the literature review and emerging conclusions from the study. The material along with information on the best practice found in the literature can be accessed at: <http://www.adl.com/insights/articles/euromot>

Ben Thuriaux-Alemán

*... is a Manager in Arthur D. Little’s London office and a member of the Automotive and Manufacturing Industry Practice and the Technology and Innovation Management functional practice. His work focuses on the alignment of strategy, R&D and operations.
E-mail: thuriaux.ben@adlittle.com*

Nick Toone

*... is a Senior Manager in Arthur D. Little’s London office, where he leads the Automotive activities. He specialises in strategy formulation and operation improvement in the automotive sector.
E-mail: toone.nick@adlittle.com*

Paul Eccles

*... is a Director and heads the London office of Arthur D. Little as well as the UK Automotive and Manufacturing Practice. He helps enterprises to transform themselves and gain competitive advantage through the development and application of new strategies, processes, systems and technology.
E-mail: eccles.paul@adlittle.com*

Stefan Lippautz

*... is a Director in Arthur D. Little’s Munich office and a member of the Automotive and Manufacturing Practice. He specialises in strategy development in the manufacturing and automotive sector.
E-mail: lippautz.stefan@adlittle.com*