

# **The Management of Innovation**

R. C. Parker

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**R. C. Parker**

*Ashridge Management College*



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## Foreword

Innovation is perhaps the most difficult of management tasks. This is partly because achieving innovation in an organization of any size involves energizing a large number of people with qualities normally associated with individual genius rather than corporate excellence. These are qualities such as originality, imagination, vision, determination, and entrepreneurial drive. It is also difficult because the organization through which the innovative individual or group must work has usually been designed not to innovate but to routinize. Those very aspects of an organization structure which make for effectiveness in stable conditions—such as clear allocation of authority and responsibility, functional specialization, and a hierarchical structure of decision-making—can act as powerful obstacles to new ideas and fresh approaches. At the same time, achieving innovation, at company level and nationally, is the most urgent task facing management today. As the newly industrializing countries gradually take over the manufacture of traditional and staple products, and as international competition generally intensifies, so the road to survival for our industries lies in the successful development and marketing of new products.

Following a lifelong career in industry, culminating in the position of Technical Director with Ferodo, Charles Parker has, since 1977, dedicated himself to two tasks—the study of the process of innovation in British industry and the active promotion and facilitation of innovation in many companies. In so doing he has, with typical clear-sightedness, gone straight to the core of the British industrial malaise by tackling the issue which is simultaneously the most important and the most intractable. His work shows clearly the vital role played by the quality and style of management, particularly at the highest levels, and illustrates how neglect of the development of professionalism in management has been associated with failure to respond to changed market conditions. Dr Parker's analysis also highlights the importance of attitudes and social climate in achieving real and lasting success in innovation. In these industries in which technology plays a leading role—and scientists and technologists number strongly among top management—there is a tendency to place too much reliance on techniques and systems and to give too little attention to the human factor. This is in sharp contrast to the approach of, for example, Japanese management.

I was very pleased when Ashridge Management College was selected as the academic base for Dr Parker's research, and I am sure that this book, which

represents one of the most important outcomes of his project, will be extremely useful both to practitioners and to students of the management process. The responsibility for innovation, however, and the power to achieve it lie in the hands of top management in industry, and not with management researchers or institutions of management education. The valuable lessons of this study will only be of benefit to society if practising managers translate them into action. Given the essentially practical nature of Charles Parker's approach, based on his own industrial experience, I believe that his influence on management practice will be considerable, and that he will derive his own sense of achievement from examples of the practical application of his findings.

**PHILIP SADLER**

*Principal*

*Ashridge Management College*

# *Introduction*

During the last decade Europe and the USA have rightly paid much public attention to two major aspects of their economy:

- (1) The deteriorating performance of many of the traditional industries; and
- (2) The lack of investment in new and up-to-date plant for the improvement of industrial performance,

and there has been wide agreement that insufficient attention has been paid to the most important single factor in both—the need for innovative design of new products and the considerations which inhibit this.

It is important to note, however, that there are a number of notable exceptions to these criticisms. Some countries perform better than others, and manufacturing companies can be found in all countries, both large and small, which are as efficient as any, and so lead their fields in world markets. They make a disproportionately large contribution to the wealth of their countries. The concern, then, is for those industries which may have had a good record but, because of the effects of the world recession, now need new competitive products in order to maintain, or regain, their position in world markets. How can this be best obtained?

In practically all areas of industry there is ample technology available on which new products can be based; equally it cannot be said that there is any shortage of entrepreneurial ideas on the application of available technology. If ideas are not put forward spontaneously there are a number of well-established techniques available for the generation and examination of ideas, and these have been shown to be effective in finding a good solution to a problem or the means of meeting a requirement which can be defined.

An idea, however, must be evaluated and accepted if it is to be translated into a new product or process, and it is here that difficulties can begin. To make headway, the idea must reach someone in the organization who can carry out a thorough evaluation and, if accepted, deploy a great many more resources for development. Thus management is involved from the first.

This involvement covers much more than picking an idea for development. The first and most important requirement is to ensure free and simple internal communications with no blocks or filters. There is a natural inertia to change in any organization which can prevent ideas being transmitted and an absence of appropriate incentives can make matters worse. Top management must

make its need for innovation known to, and accepted by, all levels and produce a general climate which encourages and does not suppress ideas.

The purpose of this study was to determine factors which either facilitated or hindered innovation, and its objective was defined as 'to stimulate increased innovative developments within manufacturing industries by carrying out practical case studies, with the co-operation of selected companies, of the good and bad factors controlling innovation within the organization'. The project, though diagnostic in execution, had in the end to become prescriptive.

Chapter 1 contains a critical assessment of the manner in which eight companies were seen to carry out their programmes on new-product innovation. Chapter 2 proposes a model for innovation which enables a company to be graded into one of six categories according to the nature of the technology associated with product development. Forty-six guidelines for product innovation are listed and are divided into six groups, three of which concern a company's corporate responsibilities and three the operation of research, design, and development. Not all guidelines apply to every company, and for four of the six categories it proved possible to identify a smaller, relevant number. Chapter 11 gives a summary of the factors which were seen to either help or hinder the innovative process. It is hoped that Chapters 1, 2, and 11 will be useful to industrialists who may only have time to scan the case histories.

Chapters 3 to 10 comprise the case histories and are intended for students researching into the innovation process and management students studying for post-graduate degrees. Teaching notes for the eight case histories, and suggestions for handling the material are available from the author. They are intended to be a guide to the selection of the most suitable case for an intended teaching purpose.

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## CHAPTER 1

# *Guidelines for Product Innovation*

### 1.1 Purpose of Study

The purpose of this study is to show how manufacturing companies might improve their performance by recognizing the responsibilities of management for product innovation. Few industries can grow, or even survive, for long unless they meet successfully the challenge of advancing technology with a succession of improved products and processes. It was apparent from the beginning that the most important factor was the corporate attitude of the board, and the leadership given by chief executives. This forward planning was too often based on the extrapolation of historic trends of financial statistics and made little or no mention of new products. Although policy on innovation should be a board responsibility the innovation process involves numerous activities ranging from the generation of original ideas, through production, to marketing, and hence all management share a responsibility.

Innovation is perhaps the most difficult of management tasks: it involves every company function and its time-scale is rarely less than five years and may exceed ten. Nevertheless failure continually to integrate all innovative activities will result in even the most brilliant ideas for a new product or process becoming sterile.

To achieve the aim of this work it was planned to examine the many discrete sectors of business activities and so diagnose the causes of the failure of management to innovate. Despite the rich diversity of purpose, nature, and structure of companies it proved possible to isolate the important factors and to express them as managerial precepts for decision and action. Not surprisingly, the picture was complex. A company can only plan its future in the context of the present, and this inevitably creates difficulty in the allocation of human and material resources between conflicting needs.

The number of precepts was restricted to those which were considered imperative rather than essential, yet they numbered forty-four, which was considered to be far too many to be put into action by executives and managers. For the study to be of practical value it was deemed essential to find means whereby a selection could be made of only those maxims that were thought appropriate to an individual company's needs.

## 1.2 Choice of Companies

The first consideration in choosing the companies was to ensure that, between them, they encompassed all stages of the innovation process. This was necessary because the four-year term of the study was likely to be less than the average period which elapses between an idea for a new product and its market-launch. The second requirement was, again, related to the restricted duration of the project, and called for companies to be manifestly interested in, and committed to, innovation. Time spent in persuading management to innovate, although no doubt a potential source of useful information, would not be sufficiently relevant to the main objective—how innovation was managed. Similarly, companies in which conflict was apparent between directors, managers, or between members of the board and management, were excluded for the reason that progress would be slow or even absent. Reassurance was sought on two additional matters: that the chief executive approved of and welcomed the study and that the company could provide adequate resources for initiating and progressing the proposed innovation.

The basis of selection was to cover as wide a canvas as possible, in the belief that observations of good and bad management practice would then have a general validity. The hope was, therefore, to be that the project should be hosted by companies which, keen to innovate and willing to co-operate, would represent a wide range of sizes, type of ownership, products, structure, organization, and manufacturing processes.

The project was described in a major financial newspaper and within a few weeks some eighty companies sought information. Preliminary visits were made to sixty, from which eight were selected on the basis of information gained by interviewing members of the board and senior managers for longitudinal studies. The smallest firm in the sample employed less than fifty, and the largest, which employed 2000, was an autonomous subsidiary of a large international group. The manufactured products represented both high and low technology, and while two companies had access to central group research and engineering laboratories, others had neither research nor development departments. The product range included consumer products, scientific instruments, and engineering products; some were custom-built and others mass-produced. Among the many different management activities represented were factoring, subcontracting, requisition, mergers, divestment, and venture groups.

## 1.3 Methodology

The first few days were spent in interviewing directors and senior management in order to learn something of their experience, skills, and attitudes. Most executives and managers were observed to have a deep commitment to their responsibilities and, when asked for a brief history of their company and a review of the current situation, gave replies that were so comprehensive and coherent that neither comments nor questions were necessary. The sessions

were unstructured and were most rewarding when it proved possible to avoid any kind of interruption. Questions clearly interrupted the interviewees' train of thought, and what had been an interesting continuous flow of information was rarely resumed.

The number of staff interviewed in this first phase ranged from eight to twelve in each company. A large amount of information was recorded and, although both duplication and occasional contradictions were noted, this mattered little in view of the wealth of data.

To facilitate comparison of one company with another a framework was required and an *aide-memoire* was drawn up as shown in Figure 1.1. Attempts were made to complete one for each company from recorded data. However, although it helped to identify important features in the company's style of management and climate, many aspects proved to be irrelevant.

Figure 1.1 *Aide-memoire* for initial interviews

## I. Background

### (a) Directors

1. Company history
2. Company purpose and objectives
3. Corporate planning — (e.g. term, turnover, profits, gap analysis)
4. Financial data
5. Nature of existing products and markets
6. Style of management
7. Management techniques (e.g. job descriptions, salary scales, job assessments, etc.)
8. Number employed, staff ratio, number of qualified staff
9. Divisional structure
10. Status and experience of product champion/business manager
11. Characteristic of business portfolio

### (b) Senior managers

1. Perceived style of management
2. Formality of organization
3. Liaison between divisions
4. Conflict resolution
5. Staff morale
6. Staff misfits
7. Management/labour relations

## II. Attitudinal factors

1. Level of top management support
2. Is there an explicit policy for innovation?
3. Are the risks associated with innovation understood?
4. Is there an appreciation within the company of the changes which may result from radical innovation?
5. Is the need for innovation seen to be urgent?
6. Is the management progressive and participative?
7. What are the qualities of interpersonal and interdepartmental relationships?

### III. Managerial — techniques

1. How is the need for a new product/process to be determined?
2. Are sales forecasting techniques or market surveys used?
3. Are formal methods used for idea-generation (specific strategies and tactics, synectics, morphological analysis, check lists, synergism, etc.?)
4. Do feasibility studies include economics, finance, and technical aspects?
5. Are formal methods used to select development (e.g. linear or geometrical programming)?
6. Are design aids used (CAD, VA, VE, Pablo, etc.)?
7. Is there budgetary control?
8. Are planning methods (e.g. precedent networks) and monitoring techniques used?
9. Is resource-levelling practised?
10. What methods are employed to meet peak demands?
11. Are there ground-rules for stopping projects?
12. Is there a concept of separate development stages with appropriate assignment of responsibility?
13. Does the organization consciously promote internal flow of formal and informal information?
14. Do detailed arrangements exist for introducing innovation to the works (e.g. tooling, union involvement) and sales (e.g. validation tests, after-sales service)?
15. Are there formal methods of selecting from possible innovations best matches with both existing technical resources and market opportunities?

### IV. Managerial—organizational

1. Characteristics of company organization (e.g. hierarchical, organic, or functional)
2. Is the R & D/D & D structured to give functional, project, matrix, or mixed project teams?
3. The precise organizational and committee structure
4. How are contrasting situations handled (e.g. fire-fighting to large radical innovations)?
5. Are there gatekeepers?
6. Is there strong coupling with external sources of information?
7. Are there provisions for prototype manufacture?
8. Are there means for promoting a continuous, formal feedback from customers?
9. Are there works and sales-complaint systems?
10. Can customer-collaboration be obtained with early field trials?
11. Are facilities provided so that ideas can be tried without serious interruption to production schedules?
12. Does the decision-maker have executive authority and access to all relevant information?
13. Are designers provided with appropriate facilities (e.g. detailing draughtsmen)?

### V. Policy

1. Are the proposed innovations general, market-specific, or customer-specific?

2. Are the innovations market or technically orientated?
3. Is the R & D defensive, offensive, or imitative?
4. Are the projects high-risk, low-risk, or a mixture?
5. Are the goals likely to be wide in concept or narrow?
6. When seeking new opportunities does the company tend to be inward-looking with little external contact or outward-looking and synergistic?
7. Do the innovations concern process, product, or both?
8. Balance of emphasis between established and new products
9. Balance between immediate, medium- and long-term growth
10. Is the strategy general, market-specific, or customer-specific?
11. Is consideration given to other than in-house innovations (e.g. licensing, acquisitions, joint ventures, technology transfer)?
12. Is there sympathy for intuitive ideas about market reactions?
13. Do the proposed innovations mainly lie within existing technical boundaries and are they sophisticated or low cost/unit weight products?
14. At what are the process innovations primarily aimed (e.g. lowering product costs, eliminating labour, improving reliability)?
15. Is there to be an apportionment of effort between fire-fighting and radical innovation?
16. Are the manpower, skills, and financial resources adequate to support the innovation and its adoption by works and selling/service costs?
17. Is there emphasis on service, price, and quality?
18. Has the R & D been given high status?
19. Is there an awareness that vacillation may hand success to a customer?

A formal attitude survey was carried out in three companies, but the additional insights and knowledge gained were judged insufficient to justify the additional two days required and the exercise was not continued.

The next phase of the study comprised two different approaches. In four companies help was given to setting up an organization and climate in which new ideas could be generated and encouraged. In the other four the study was largely observational: development meetings were often attended and regular visits were made over a period of up to three years. With one exception the executives showed keen interest throughout the work and offered every possible facility and help.

Approximately halfway through the work it was decided to test the feasibility of writing guidelines based upon experience already gained within companies and upon the results of published researches into innovation. Two advantages were sought: a more compact framework for assessing a company's performance and the fulfilment of at least part of the study. It was found that sufficient data had been gathered to formulate eight sets of six or seven guidelines on the management of product innovation.<sup>1</sup> They were mainly derived from observations in firms and excluded external economic and fiscal matters.