

THE UNIVERSITY OF STRATHCLYDE
DEPARTMENT OF MARKETING

AN EMPIRICAL INVESTIGATION OF THE PRODUCT
ELIMINATION DECISION - MAKING PROCESS IN
BRITISH MANUFACTURING INDUSTRY

(In two volumes)

VOL 1

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Abstract

This thesis contributes to improved product revitalisation/deletion decisions in British industry, by exploring and describing the different policies and practices of UK manufacturers.

The decision process is conceptualised in terms of four sequential stages: recognition of a product deletion candidate; analysis of the candidate's situation and consideration of alternative methods of revitalisation; evaluation of the impact of elimination and reaching a final decision and the implementation of the final decision.

The influence of certain elements of corporate planning and of a number of product-specific factors on the decision variables of each of the four stages is explored. The product-specific factors may be summarised as: 'is the product a range or an item in a range? is the product completely deleted or replaced? and where is the product on its PLC curve?' The first two of these product-specific factors are combined into a classification matrix, entitled "The Dropclass Matrix", which yields four "dropclasses".

The three phases of the study are desk research, an interview survey and a mail survey. The research classifies elimination decision-making for the sample companies, into two groups: those which occur as part of strategic or annual product planning, and those which take place as a result of company control mechanisms. The latter decisions are largely ad hoc.

The specific circumstances which set the decision-making process in motion were found to influence the nature and number of factors taken into consideration throughout the decision-making process.

It was found that the "dropclass" affected the revitalisation and evaluation of the product, while the product's stage on the PLC curve affected the revitalisation, the evaluation and the implementation stages.

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CHAPTER 1

Introduction

1 Introduction

1.1 Preamble

Over the last sixty years in developed Western countries, firms have generally grown from single- to multi-product organisations. From the thirties onwards, firms increasingly turned their attention away from a production orientation, which focused on perfecting the mass production of largely undifferentiated goods. Instead they pursued a selling, then a marketing orientation, which focused on the development of products designed to meet the growing sophistication of consumers who were becoming more and more familiar with basic products and who were ready to pay for refinements. Although this shift in emphasis was halted by the Second World War and its aftermath, it was taken up with enthusiasm during the fifties and sixties, as companies sought to maximise the benefits of satisfying changing consumer demands.

However, the rapidity of political, technological and market change during this period was unprecedented. While tremendous opportunities existed, their realisation became dependent upon the analysis and anticipation of technological, market and competitive challenges. In short, for companies to match their capabilities to the changing environment(s), they had to adopt a strategic view of their product-markets. Failure to adopt this strategic view entailed the risk of products becoming unsuited to the needs and expectations of the market, of declining sales and profits and of being unable, through lack of time and/or resources, to take the necessary corrective steps.

The more change there is in the firm's environment, the greater the need to develop the product mix constantly, so that it matches the environment. This development and redevelopment of the product portfolio, which is the essence of product policy, takes place in a

strategic or long-term context, since the possible changes that can be made at any one time were comparatively small, given the constraints of human, physical and financial resources. This philosophy still applies today.

Parallel with the development, in practice, of product policy from mass production to product differentiation, there grew, in academic circles, a body of literature devoted to the interface between strategy, structure and innovation (Carter and Williams 1957, Johnson and Jones 1957, Burns and Stalker 1961). As practitioners grappled with the complexities of developing new products, so researchers and academics built up an extensive portfolio of writing devoted to the problems associated with the design, development and introduction of new products. This literature has provided a rich body of knowledge, at both the tactical and strategic level, concerned with NPD (Booz, Allen and Hamilton 1968, Rothwell 1974, Baker 1975, Cooper 1979, Crawford 1983, John 1986).

However, in some people's estimation, NPD and product policy have become synonymous. This is understandable if, as will be recalled in the early stages of the evolution from mass production to product differentiation, management's ideas were dominated by the need to offer a range of products commensurate with market forces. Yet surely, in the progression from a single- to a multi-product organisation, there arose a need for those organisations' managers to consider the possibility of withdrawing products that were not satisfying consumer demand? While academic authors associated with product policy have paid full and mature regard to NPD, the subject of product revitalisation and/or elimination has not attracted such close attention. Of a random sample of basic marketing textbooks including those of Baker (1985b), Cannon (1986) McCarthy (1975) and Kotler (1984) only one mentions the subject of revitalisation/deletion. It is, nonetheless, becoming a recognised area of neglect in marketing academic circles:

"Historically, the 'uninspiring and depressing process' of 'putting products to death' has been neglected in favour of new products (Alexander 1964). Numerous recent works by Avlonitis (1983,1984), and others have helped redress the imbalance but the new product and deletion decisions continue to be discussed separately despite the need to be treated explicitly together".

Saunders and Khan (1986) p 1010

"Product deletion as a strategy of mature products is a neglected topic in marketing. Some attention has been directed to it in recent years, but interest in the subject lags far behind interest in the development of new products. In view of all that has been said about the importance of managing new products effectively, it is surprising that this last phase of mature product marketing should be so disregarded".

Bell (1972) p 682

In addition to the academic awakening to the subject, it has received a good deal of coverage by management publications:

"Product development isn't just about launching new products. It's also about re-appraising existing products in order to re-ignite sales growth".

Rapoport (1984)
The Financial Times/Management Page
October

"If you put the same marketing effort behind a smaller range of lines, you can thus afford to give better value to the consumer and you can make up the same value over half the number of lines".

Sir Adrian Cadbury (1984)
The Sunday Times
April 14

"Because of its nature, the harvesting job has traditionally been seen as unglamorous and unhelpful to career progression. This is unfortunate, since such jobs are crucial to the health of the company. Their importance should be recognised by all means, including the policy of putting the best people into harvest as well as grow jobs".

Cotton (1982) p 32
Marketing, March 11

Although relatively little of the literature on product policy addresses the product revitalisation/deletion issue, there have been a number of normative articles written on the subject, as well as the recent pioneering study by Avlonitis (1980). Despite these contributions, knowledge of product revitalisation/elimination is far from complete, while related theory must still be considered to be in its infancy. This thesis intends to participate in building the much-needed body of empirically-based theory and to encourage future researchers to take up subsequent challenges.

1.2 The Status of Product Elimination Theory and Knowledge

The most striking feature of product elimination literature is that it is in parts wide-ranging and general, and in other instances narrowly-focussed and detailed. It is at once fraught with duplication, repetition and omission. The shortcomings in the literature can be reduced to the following 5 points.

First, the majority of contributions are normative and from a comparison of these normative, logically-derived models with empirical descriptions of product elimination practice, they appear to be somewhat inappropriate. In particular, the ordered procedures, checklists, plans and assigned responsibilities do not mirror empirical description. However, before a definitive statement of their worth may be made, it is necessary to build a stronger base of empirical evidence, so that an accurate evaluation can be made.

Second, the most comprehensive analysis of product elimination decision-making, carried out by Avlonitis, was confined to the engineering sectors of industry. Consequently, there is a need to compare the policies and practices he described with those in other industrial sectors, in order to build a more complete picture of the decision. Furthermore, as this study was arguably the first comprehensive analysis, it requires replication in order to establish the reliability of its findings.

Third, although the work of Avlonitis looked at important influences on the elimination decision that were external to the firm, academics are still largely ignorant of how many organisational factors may affect the extent and nature of revitalisation/deletion process. Specifically, the strategic orientation of the company and elements of strategic choice are key potential influences, given the strategic context of product policy introduced in section 1.1 above.

Fourth, from the evidence of recent empirical work (Avlonitis 1980, Salerno 1983) it has become clear that product-specific factors, largely ignored by early normative writers, are crucial to the way in which the revitalisation/deletion decision is handled. If knowledge of the subject is to be expanded and if theory is to develop, it is vital that full regard is given to these factors; that they are adequately described and that behaviour is related to them.

Fifth, due to the way in which product policy literature has developed, namely, by concentrating on NPD, articles on the revitalisation/deletion aspects of product policy have tended to ignore the managerial context of mature product management, while there are a number of assumptions about the "position" or "setting" of elimination decisions vis-a-vis other managerial product decisions. The literature reviewed in Chapter 3 contains several authors who assume a regular (monthly) product review meeting is the ideal way to detect product elimination candidates. Others still assume that the annual planning time provides the best forum for detecting these candidates. There is virtually no evidence to support (or refute) these assumptions.

1.3 The Research Problem and Objectives

The ultimate problem to which this research makes a contribution is that of improved product revitalisation/elimination decisions in British industry. However, before normative recommendations can be made, theoreticians need to be familiar with the nature of the phenomenon they are dealing with. Consequently, the essence of the

research problem that the current work addresses is, "What is the nature of the product elimination process across British manufacturing industry?" The guiding research objectives are derived from this general problem statement:

- 1 To extend our knowledge of the anatomy of the product elimination process beyond the current limits of sectoral descriptions.
- 2 To describe those company- and product-specific factors that influence the process which previous research has ignored.

A full description of the research content and objectives is given in Chapter 4.

1.4 Boundaries and Dimensions of the Study

So far, in the course of this introduction, we have spoken about the product revitalisation/elimination decision and the management of mature products. It is apposite at this juncture to clarify terms and state those dimensions of product policy with which the work is concerned.

Building on the major theoretical articles (Alexander 1964, Kotler 1965) and comprehensive empirical studies (Avlonitis 1980, Salerno 1983, Gauthier 1985), the investigation in hand views the product elimination process as four-staged, comprising:

- 1 The identification of product elimination candidates
- 2 Analysis of the candidates' situation and consideration of alternative methods of revitalisation
- 3 Evaluation of the impact of elimination and reaching a final decision
- 4 Implementing the decision.

These four stages will be typically referred to as the product elimination decision and the product revitalisation/elimination decision.

Furthermore, the subject of study is limited to the behaviour of companies in eliminating a product range or certain versions, sizes and/or models in the range. The study does not stretch to the behaviour of companies eliminating an entire department or division, a procedure commonly referred to as "divestment" (Harrigan 1982, Harrigan and Porter 1983).

In addition to describing the product elimination decision across British manufacturing industry, the study examines the effect of various inputs to the strategic plan on the nature of the decision. In doing so, it contributes to an important area of neglect in general marketing theory: the interface between corporate strategy, marketing strategy and tactics (Anderson 1982, Wind and Robertson 1983).

Finally, the study identifies and describes important product-specific factors which impinge upon the decision process, and explores the effect of these factors on this process.

1.5 Research Method

Although empirical research into product elimination is still relatively sparse, the conceptualisation of the more recent studies has been used as a framework in the current study. Specifically, the works of Rothe (1971), Hise and McGinnis (1975), Avlonitis (1980), Salerno (1983) and Gauthier (1985) were integrated into a conceptual framework.

The study comprised three stages: literature research, interview data collection and analysis and finally, mail questionnaire data collection and analysis. This design was chosen to maximise the strengths, and minimise the weaknesses of both qualitative and quantitative methods.

The population under study involved manufacturing companies, in a wide range of manufacturing industries, employing more than 100 people. The sample is fully described in Chapter 4.

1.6 Significance of the Study

Despite recent efforts, the product revitalisation/elimination decision, which is receiving more and more attention in management circles, has been largely overlooked by researchers. Indeed, recent studies have tended to show that the normative view of product elimination is not representative of management practice. In short, the academic community has failed to provide information and insight into an area of managerial decision-making which is recognised as crucial to effective operations. The previously-cited studies by Avlonitis (1980), Salerno (1983) and Hise et al (1983) have begun the job of developing a comprehensive body of knowledge, but, due to the general neglect of the area, their efforts have not taken product elimination theory far beyond infancy. In order to improve product elimination practice it is vital to establish knowledge of how it is currently carried out across the broad spectrum of manufacturing industry, and to define the forces to which it is subject.

The significance of this study is its contribution to our understanding of the perceived importance of elimination activities within organisations, of how they are tackled and how the process changes in different circumstances.

In participating in the development of an empirically-based body of knowledge, it adds to the construction of a theory of product elimination which ultimately will improve practice, teaching and research.

1.7 Order of Presentation

The thesis is divided into two volumes. The first comprises five chapters which review the literature, develop the conceptual foundation and discuss the method of the research.

Chapter 1, the current introductory chapter, discusses the background and scope of the thesis. It contains a brief statement of the study's main objectives and an outline of its theoretical framework.

Chapter 2 situates the product elimination decision in the context of the overall strategic framework. The origin and need for strategic planning are discussed, and the link between strategic planning and product policy or planning is developed. The key elements of strategic planning are then examined with respect to one aspect of product policy: product elimination.

Chapter 3 presents and summarises the previously-published normative and descriptive literature on the product elimination decision-making process. Commentary and analysis of the contributions is also made.

Chapter 4 reiterates the research content, discusses alternative research methods and presents the method chosen to meet the study's objectives.

Chapter 5 discusses the analysis of both the interview and mail survey data.

In volume two, the research findings are presented.

Chapter 6 presents the findings of the interview survey. Due to its detail it is divided into eight subsections. Each of the first seven subsections deals with one of the main spheres of investigation, while the last subsection recapitulates the interview findings and explains the research issues generated for the mail survey stage of the study.

Chapter 7 presents the findings of the mail survey stage.

Chapter 8, the final chapter, summarises the results of both the interview and mail surveys. It draws implications for managers and for theory. Finally, an assessment of the study's limitation is made together with suggestions for further research.

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CHAPTER 2

Marketing Strategy, Product Policy and Product Elimination

2 Marketing Strategy, Product Policy and Product Elimination

2.1 Introduction

The premise of this chapter is that, as the product elimination decision is about whether or not to continue the production and marketing of a given product, it is an integral part of a company's overall strategy. It is, therefore, pertinent to consider whether the elimination decision is taken as part of overall strategy, in a "proactive" manner, or whether it is largely ad hoc and "reactive".

The purpose of this chapter is to explore the extent to which product elimination is provided for by the elements of strategic planning : it seeks to situate the product deletion decision within the overall strategic framework. The study, a detailed analysis of one managerial decision, will benefit from this exercise, which puts the decision in question into perspective as one of a host of critical matters.

The chapter has four subsections. First, as the subject of strategy and strategic planning is fraught with semantic confusion, an overview of the major differences in definition and meaning is necessary. Second, the origin and need for strategic planning in the company are discussed. Third, the link between corporate strategy and product policy or planning is discussed. Fourth, the key elements of strategic planning are examined with respect to one aspect of product planning : product elimination.

2.2 Some Definitions

That the subject of corporate or strategic planning is in semantic disarray is somewhat discouraging, as it necessitates pages of definition and argument, in order to find some consensus sound enough to build upon. Without this, any advances will be subject to further hair-splitting analysis. In fairness, differences in approaches to corporate strategy are not always purely semantic.

Differences in opinion fall into four categories:

1. Goal setting and strategy formulation
2. The nature and sequence of strategic planning
3. Goals and objectives
4. Policy and strategy.

Each of these will be discussed in turn, with an indication of the stance taken in the work in hand.

2.2.1 Goal Setting and Strategy Formulation

There is some disagreement as to whether or not setting goals or objectives is part of the strategic planning process. A number of definitions of strategic planning are based on the military concept of strategy. Basically, military strategy involves the deployment of resources to meet objectives pre-ordained by national leaders (Andrews 1971, Baker 1985a).

Goal (or objective) formulation is not the business of military strategy. Ansoff (1968) develops a concept of business strategy which provides a framework for defining the scope and direction of growth, but not for setting objectives. His view of strategy does not embrace goal formulation.

Hofer and Schendel (1978) also develop a concept of strategy where objectives are already given: "the fundamental pattern of present and planned resource deployments and environmental interactions that indicates how well the organisation will achieve its objectives" Baker (1983a) p.296.

"[Strategic planning] sets out the objectives of the company and the means (strategy) by which the company intends to meet those objectives"

Hussey (1971) p. 13

"Strategic planning is the managerial process of developing and maintaining a strategic fit between the organisation and its changing marketing opportunities. It relies on developing a clear company mission, objectives and goals, a growth strategy and product portfolio plans."

Kotler (1980) p.74

Thus far a clear distinction exists. A strategy is a means for achieving objectives and the strategic or corporate planning process embraces the formulation of objectives. A number of centres, however, include objective setting in their definitions of strategy.

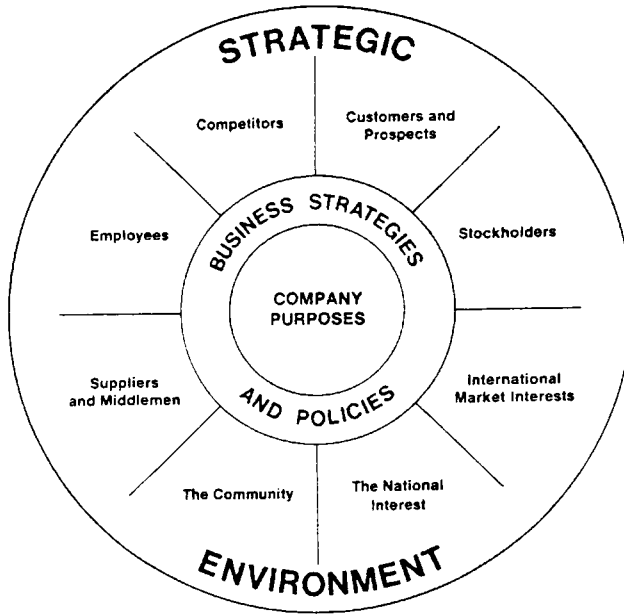
"Strategy formulation includes identifying an organisation's internal strengths and weaknesses, determining a firm's external opportunities and strengths, establishing a company mission, setting objectives, developing alternative strategies, analysing these alternatives and deciding which ones to execute."

David (1986) p.4

Such a view describes strategic planning as a "holistic" process (Brownlie 1985a).

Similarly, Cannon (1973) explains business strategies as "the Directional Action Decisions required competitively to achieve the company's purposes", (p.XXV). In the Figure reproduced below purpose and strategies are distinct.

Figure 2.1 Basic Relationship of Strategy to Purpose and Environment



Source: Cannon, J.T., (1973) Business Strategy and Policy

Glueck and Jauch (1984) also base their extensive discussion of strategy on its basic definition as "the means used to achieve the ends (objectives)". They do, however, include the formulation of objectives in their definition of the strategic management process:

"The strategic management process is the way in which strategists determine objectives and make strategic decisions." p.5

Such a perspective is echoed in the following quotations:

"Strategic planning is concerned with both formulation of goals and selection of means by which they are to be attained. Thus strategic planning is oriented to ends as well as means."

Ackoff (1970) p.5

Chandler (1962) defines strategy as

"the determination of the basic long-term goals and objectives of an enterprise and the adoption of courses of action and allocation of resources necessary for carrying out these goals." p.13

For Andrews (1971) corporate strategy is

"the pattern of major objective purposes or goals and essential policies and plans for achieving those goals, stated in such a way as to define what business the company is in and the kind of company it is or is to be." p.28

As there is no single definition of strategic planning that is broadly accepted, this study takes the view that strategic planning or strategy formulation includes setting objectives, for two main reasons. Firstly, it is practically impossible to discuss strategy formulation without reference to the objectives it attempts to realise. This is borne out even by those authors taking the narrower view, who often devote "separate" chapters of their work to discuss objectives (Ansoff 1968; Hofer and Schendel 1978). Secondly, as we shall see later, strategic planning is a response to ever-changing business environments which prescribe the company's adaptation to change in order to survive. It follows that in the face of different environments, objectives have to change as much as the strategies themselves. This is reflected in the findings of a recent study by Doyle, Saunders and Wong (1985), who found a striking difference in the strategic objectives between successful (Japanese) companies and less successful (British) companies. It appears that the intensely competitive environments in the industries studied were not met with aggressive, marketed objectives by British managers, who preferred the more defensive and short-term profit objectives they have pursued in the past.

2.2.2 The Nature and Sequence of Strategic Planning

With regard to the nature and sequence of the strategic planning process, there is considerable disagreement which commands attention: the synoptic and incremental views of the strategic

planning process. The synoptic model as proposed by Andrews (1971), Hofer and Schendel (1978), Thomson and Strickland (1981) and Grant and King (1982), argues that strategic decision-making is a comprehensive process, including a number of activities such as environmental scanning, goal setting, internal analysis. On the other hand, the incremental model (Mintzberg 1973, 1978; Uytterhoeven, Ackerman and Rosenblum 1977; Quinn 1980 and Fredrickson and Mitchell 1984) suggests that a firm's strategy is the result of many strategic decisions that have been made, one at a time, over a period of years.

One of the most influential proponents of this view is Lindbloom (1959) who described a situation where problems come to the attention of top management when middle management can no longer cope. Organisations deal with problems as they occur and respond to change when it happens. This he labelled "the science of muddling through".

Choosing which of these views is to form the basis for further discussion cannot be based on an informed opinion of which is "better". Indeed, recent studies in the U.S. have shown that each type of strategic planning may be particularly suited to a specific business environment (Fredrickson 1984; Fredrickson and Mitchell 1984). The study in hand adopts the synoptic - or comprehensive - view of strategic planning as it provides a well-documented framework for analysis.

2.2.3 Goals and Objectives

As with many of the elements of strategic planning there is no agreement as to the precise meaning of the terms "goals" and "objectives".

"Some authors use the terms interchangeably; some use the term 'objectives' to refer to short-term results and 'goals' to refer to long-term results. Other authors reverse these meanings. Still others use 'goals' as general organisation-wide performance targets and 'objectives' as specific targets set by subordinate managers."

Baker (1985a) describes goals as long-term, open-ended attributes a firm seeks to acquire, while Ackoff (1971) defines goals as "objectives whose attainment is desired by a specified time within the period covered by the plan*" (p.23). Clearly what is of importance here is that the concepts are clearly identifiable by whichever handle is given them. In the current work, therefore, objectives refer to the long-term, while goals refer to the shorter "operating" horizon.

2.2.4 Policy and Strategy

In dealing with the definition of strategy, it is important to clarify whether or not it is an alternative term for the word policy. Charles Kline, writing in 1955, speaks of "The Strategy of Product Policy" which seems to imply that they are interchangeable.

Ansoff (1968) distinguishes the two, A strategy, he contends is a "rule for making a decision" whereas a policy is "a contingent decision", that is, a predetermined response to a set of defined circumstances. Marks and Spencer P.L.C. therefore has a policy of minimum-fuss refunds, which guides the actions of personnel in all levels of their department stores. A strategy on the other hand is, as Baker (1985a) explains:

"a statement of the action to be adopted under a state of partial ignorance where all the alternatives cannot be recognised and stated in advance of the need for a decision."
p.19

In this view policies are subservient to strategy.

Professor Bell (1979) takes the opposite view when he states "Policies create a framework within which strategy is formulated."
(p. 46)

* The latter's view is shared by Godiwalla, Meinhardt and Warde (1981) and Lorange and Vancil (1975), Kotler (1980) and Quinn (1977).

That the full connotations for each term are not discussed further, reflects the stance of this review, which adopts Baker's position when he says:

"no particularly useful purpose is to be served by attributing precise meanings to the terms "business policy" and "strategy" when practitioners appear to find no utility in such a distinction. However, both schools of thought use "policy" with the connotation "course of action" and it is this general meaning which is intended hereafter."

Baker (1985a) p.21

2.3. The Origin and Need for Strategic Planning

Many books dealing with strategic planning emphasise the role it has to play in guiding the company successfully through the years. Business strategy is seen as the means by which organisations adapt to change, survive and grow stronger.

"An organisation's performance in the marketplace depends on the degree of creative alignment between the organisation and the environment. The ideal organisation examines its environment for opportunities, sets appropriate objectives, develops a strategy to achieve them."

Kotler (1980) p. 68

"The job of strategic managers is to make the best use of a firm's resources in a changing environment"

Glueck and Jauch (1984) p.1

Many aspects of the industrial environment are increasingly turbulent, and the need for strategic planning has never been more acute. Not only have the rates of political, economic and technological development been unprecedentedly rapid, business organisations have increased in complexity, which underlines the need for strategic planning further. Between the years of 1949 and 1970, according to Rumelt (1974) the majority of the Fortune 500 companies had changed from single-product-line firms to multiple

industries either through product development or mergers. This has also dictated that some form of formal address to the question of the firm's destiny be made:

"The accelerating rate of change today is producing a business world in which customary managerial habits in organisations are increasingly inadequate. Experience was an adequate guide when changes could be made in small increments. But intuitive and experience-based management philosophies are grossly inadequate when decisions are strategic and have major, irreversible consequences."

Henderson (1979) p. 66

The reality of this statement is reflected in the findings of Doyle, Saunders and Wong (1985) cited earlier where traditional philosophies of short-term revenue were far more apparent in companies having greater difficulty in surviving. Long-term survival depends on how well the business relates to its environment now and in the future, which implies making decisions now about sources of environmental change, the terms and conditions of future competition and the best way of meeting these challenges.

These challenges are not new, for it is recognised that since the middle of the 20th Century, business firms have become increasingly concerned with the techno-economic mismatch between the products of the firm and the demands of the marketplace (Ansoff, Declerk and Hayes 1976; Baker 1987). This mismatch is known as the "strategic problem" whose solution is seen to lie in the process of "strategic planning", a rational analysis of the opportunities offered by the environment and of the strengths and weaknesses of the firm and selection of a match - or strategy - between the two. Strategic planning is seen as a product of the turbulence of the 50s, although its arrival in the boardroom varies from country to country (Ansoff 1979). What follows is a brief review of the recent economic history of the industrially developed or first world to enhance our appreciation of the reasons for the emergence of a strategic approach to business during the 1950s.

2.3.1 Industrial Development - An Overview

Modern business history in the U.K., U.S. and Europe can be dated from around the 1850s when these nations were in the throes of transition from a primarily agricultural and commercial economy into a modern industrial state (Chambers 1961; Kirby 1981; Clapham 1938). Based on a stream of innovations in mining, agriculture, engineering, spinning and weaving industries, the output of these countries expanded, as did their populations and the concurrent needs and demands of these populations. In Britain, for example, the commercial advance of the "great industries" of textiles, coal mining, steel and shipbuilding, rested on the commercial introduction of technical innovation for the purpose of capturing progressively wider sections of the market by the reduction of price relative to quality (Chambers 1961). This enhanced the role of the businessman whose task it was to direct capital resources, and these early entrepreneurs initiated the building of bigger factories, organised job specialisation, and therefore quickened the pace of influx of workers to the towns. Output increased accordingly, although, improved medicine, housing and nutrition ensured that it did not catch up with the demand of an increasing population (Chambers 1961, Baker 1985a).

By the turn of the century, in most developed countries a modern industrial infrastructure existed. While environmental turbulence was strong, the early entrepreneurs were almost exclusively involved in creating production processes capable of achieving greater levels of output and in building, through ever-increasing volume, their market shares. Competition, as we understand it today was under-developed because of the expanding demand levels, while strategic thinking was redundant in the light of the single-minded quest for expansion.

The period 1900 to 1930 was more a period of consolidation the emergent industrial structures. Now firms sought to realise fully the benefits promised by Adam Smith's (1776) theory of the division of labour. Attention was turned to perfecting the mechanism of mass production, which progressively decreased the costs of

undifferentiated products. As a result managerial thinking focused on its internal production capability, and as Ansoff (1984) says

"the result was a set of managerial perceptions, attitudes and preferences which later came to be known as 'production mentality'. Problems to be solved were internal, not strategic, and the perceived costs of diversifying or competing far outstripped the perceived benefits."

Towards the latter half of the 20s, and into the 30s, changes began to make themselves felt. Firstly, the nature of consumer demand began to change, as those with purchasing power became familiarised with the basic products and, changed by the act of consumption, were ready for refinements. Secondly, the volume necessary to retain efficiency in the manufacturing plants was becoming increasingly competitive, especially in export markets, as more and more countries developed industrially. The most striking outcome of these changes was the shift from standard to differentiated products. This philosophy, which exploits a market opportunity, is, at its most basic, a competitive philosophy. The most famous example of early product differentiation is that of General Motors. At the time of their decision to differentiate products from others on the market, they were suffering from an inadequate volume of sales.

"..... we were not competitive with Ford in the low-price field where the big volume and substantial future growth lay"

Sloan (1965) p. 84

The decision was taken to compete with Ford, using the market's readiness to trade up:

"The field for cars in the first grade, we noted was then practically monopolized by Ford, and we were trying to invade it. We did not propose to compete head on with the Ford grade, but to produce a car that would be superior to Ford, yet so near the Ford price that demand would be drawn from the Ford grade and lifted to the slightly higher price in preference to Ford's utility design."

Sloan (1965) p. 92

"While the total market, including used cars expanded, ... the role of the new car was to cover scrappage and growth in car ownership. Meanwhile the used cars at much lower prices dropped down to fill demand at various levels for basic transportation. Mr Ford failed to realise that it was not necessary for new cars to meet the need for basic transportation." p. 186

The logic behind this pioneering trend was not recognised by many companies, and when confronted with stagnation and market saturation, preferred to cling to the skirts of a production orientation rather than take up the challenge of the newer marketing orientation which might have eased the effects of the depression. Although such ostrich attitudes were partly due to self-preservation, in that a great deal of money was invested in mass production facilities, marketing and strategy were further hindered by the transfer of physical and human resources to the war effort.

After World War II, businesses began to satisfy the pent-up demand for consumer goods of all kinds, and propelled by new technology developed for the military during the war, the period 1945 - 1955 was largely characterised by reconstruction and growth. However, once this demand was satiated, the underlying causes of the pre-war Depression returned to the fore and business growth, its very survival, would no longer depend solely on expanding demand, but also upon the firm's ability to compete for the demand which existed (Ansoff 1984; Baker 1986). In addition, technological and political changes were more rapid than at any previous time.

Competition through product differentiation was embraced on a much wider scale than in the 30s, and with it both incremental and radical product development, better packaging and cosmetic appeal to attract the potential user.

This Age of Discontinuity (Drucker 1961) demanded analysis and anticipation of technological, market and competitive change, in order to survive. Until this period, past experience was a reliable guide to the future. The need for anticipation was not

urgent because changes were fewer in nature (and in their sources) and slower. Most of the environment shifts had originated from leading aggressive firms which could, with reasonable justification, claim to control their destiny. The strategic problem had not emerged, because change could be coped with. Since the mid-fifties the discontinuity and rapidity of change have accelerated, promoting the need for strategic planning to understand and adapt to change.

While the ability to adapt to the environment has ensured the survival of many species, the ability to change the environment has been the prerogative of the human species. This privilege is shared by the business organisation which can choose to exercise its will to plan and execute fundamental changes in its character, or can bring about fundamental changes to the environment in which it operates. An empirical testimony to this theory is provided by Hooley and Lynch (1985) where a planning approach of "wait and see" was more common in the poorer-performing companies than in the so-called "High Fliers". Conversely, the planning approach of "make it happen" was more common in the "High Fliers".

2.4 Product Policy and Corporate Strategy

As the preceeding section shows, strategic planning - the analysis of the environment, of the strengths and weaknesses of the firm and the selection of a strategy between the two - was born of the need to deal with and control increasing rates of change. The General Motors example quoted earlier was one of the first instances of this kind of planning, and looking closely at this example it is plain that the core of the strategy rested on products and markets. Sloan described the changing perceptions and needs of the American market of the time and adapted his product offering accordingly. The essence of this adaptation was in the differentiation of products. Among the other changes described, the increasing differentiation of products during the 50s intensified the turbulence of that decade.

Differentiation, then, is a strategy for managing products to achieve a comparative advantage over the products of competitors.*

Indeed, it is one of three generic strategies proposed by Porter (1980):

overall cost leadership
differentiation
focus

Until the incipient shift in the 30s, overall cost leadership was the primary method of competing in the market. As we have seen during the 30s, and to a greater extent in the 50s, companies began to adopt a strategy of differentiation. A focus strategy can be based on either of the first two, but is on a very limited scale, restricted to one segment of the market. A similar classification is proposed in nearly all basic marketing texts, expressed as

undifferentiated marketing
differentiated marketing
concentrated marketing.

Clearly all three are product, marketing and corporate strategies.

The logic of the strategy of differentiation can be seen, not only in its evolution, but also in theoretical terms. As we have explained, by the middle of this century output had increased enormously, economies of scale abounded, industrial concentration was becoming pronounced and demand was saturated, virtually to the point of price inelasticity (Baker 1975). At this level (collusion

* Not all authors would agree. Hirota (1982) argues that corporate strategy is made of two discrete components : product-market strategy and competitive strategy. Selection of product-markets alone is not enough to earn a high profit rate. It must be complemented by a competitive strategy; the selection of the method of competition for each product market.

notwithstanding), more efficient firms will reduce prices even further to maximise contribution, thereby driving less efficient producers from the market. However, the fact that this can only happen where products are homogenous was recognised by those companies which differentiated their product, thereby escaping the straightjacket of head-on price competition. Clearly if a product is different in some way meaningful to the buyer, direct price comparison is less easy and the company can exert at least some control over its prices. The competitive opportunities offered by this market-oriented strategy encouraged manufacturers to search for new products upon which to build their futures. Thus the nascent concept of product policy emerged from the same environmental conditions which gave rise to strategic planning. Their histories are intimately related, as is their substance, a view supported by a number of authors. A few are cited, and attention is drawn to the similarity of these statements with those on definitions of strategic planning/corporate strategy.

Ward (1962) defines product planning as

"a function of management concerned with the forward development of a company, taking existing assets, resources and experience as the basic premise and relating or adapting them to changing markets, continuously and systematically."

Murdick, who carried out an extensive literature review in 1962 also defined product planning as

"the development and formulation of the strategy for the synchronised creation, production and marketing of products in order to optimise the achievement of long term objectives and goals." p. 91

Hammouda (1968) forwards a definition of product planning which is particularly similar to statements on the substance of corporate strategy. Product planning is

"a strategic planning function of Corporate management which comprises the selection of the boundaries of a firm's business, the continuous development of the optimum product mix and the formulation of the appropriate marketing strategies to achieve company objectives." p. 77

More recently Clayclump (1980) defined the primary responsibility of top managers as managing the portfolio of product-markets.

In their book "Product Policy and Management", Baker and McTavish (1976) state

"In that the success of the company is measured not only by its current profits but also by its long-term growth, the company must strike a delicate balance between optimising its current operations and making adequate provision for the future. In a manufacturing concern, or any other organisation for that matter, these aims can best be reconciled through a continuity of product policy." p. 19

While the link between corporate strategy and product strategy is almost universally recognised, other concepts of product strategy or product planning cannot be ignored. Baker and McTavish (1976) quote a definition of product planning given by NEDO in a survey of the machine tool industry. It is

"the evaluation of the range, more specification and pricing of existing and new products in relation to present and future worker requirements and competition ..." p. 16

Much of the literature on product planning focuses on product management which entails the organisation of product planning through the Brand system, (Baker 1984; Bureau 1981; Bell 1979). Under this system a manager, called a product manager, and possibly a small team of people, are exclusively responsible for the management of the fate of one, or a group, of products. This is generally accepted as being a predominantly operational function (Bureau 1981).

In a recent survey of the functions of 183 product managers, Cossé and Swan (1983) conclude that, by and large, product managers do not have a strategic orientation. Rather, the majority are "cost oriented" and tend not to use longer-term data and are more occupied with what might be termed "management control" activities. Avlonitis (1981) reconciles these two views by pointing out that the nature of product planning depends on the organisational level we have in mind. As an integral part of corporate strategy, product planning is central to "determining business scope, identifying customer classes to be served, in selecting comparative approaches, in deciding technology and product emphasis...". Clearly the decision related earlier by General Motors falls into this category, a point also made by Avlonitis.

However product planning can also be described as part of the continuous administration of the company's product ranges, which calls for regular monitoring of product performance against objectives. Very often this is the essence of management control, a topic resumed in Chapter 3.

A third view of product planning taken by some writers includes the explicit consideration of the need to plan how, when and where to add new products, delete any existing ones or modify any of them (Wind, Mahajan and Swire 1983). This view is shared by Kotler (1980), Kollat et al (1972), James (1972) and Winkler (1972).

A final definition of product policy and planning is the management of new product development (Marvin 1972, Spitz 1972, Stone 1976, Baker and McTavish 1976, Parkinson 1980). This is unsurprising as the root of product policy was in the development of a strategy of differentiation through new products. In addition, it is now widely accepted that new products are essential to the survival of any business, which reinforces its limelight in the product policy literature. What is less obvious, however, is that "every incentive has a built-in disincentive" and this certainly applies

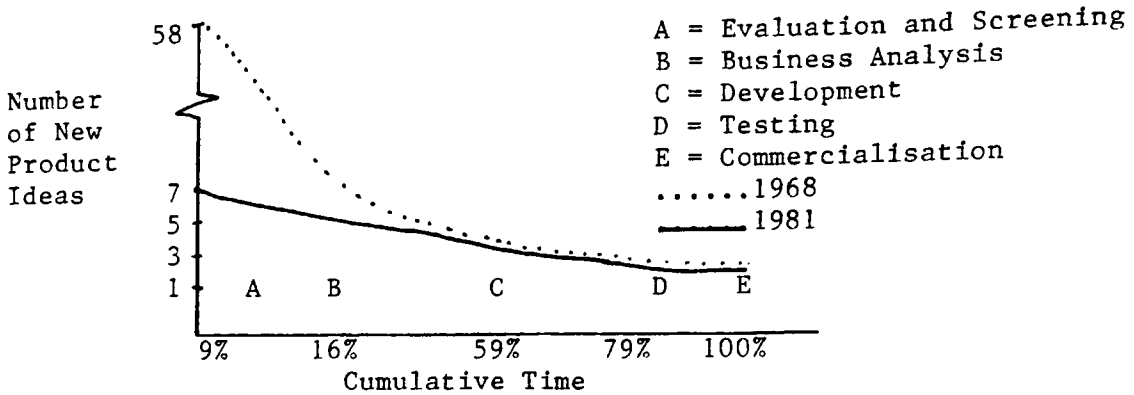
to the use of product differentiation and NPD as a competitive strategy (Baker 1975). While innovation is necessary, it is both expensive and risky, the main reasons for this are stated by Kotler (1980).

1. Most product ideas which fuel the product development process never reach the market.
2. Many products that do reach the market are unsuccessful.
3. Successful products tend to have shorter lives than in the past.

While there has been a great deal of attention paid to improving these three conditions, their implications have not been followed through. Each of these conditions entails implications for the "elimination" decision.

In considering the implications of the first of these conditions, attention turns to the seminal work of Booz, Allen and Hamilton (1968; 1980). In their 1968 study, an average of 58 new product ideas were required to produce one successful new product. By 1982, a new study showed this ratio had been reduced to seven to one. The reasons forwarded for this change was the addition of a preliminary stage to the familiar 6-step NPD process: idea generation -> screening and evaluation -> business analysis -> development -> testing -> commercialisation. The preliminary stage was the development of an explicit new product strategy that identified the strategic business requirements new products should satisfy. Effective benchmarks were set up so that ideas and concepts were generated to meet strategic objectives. 77 per cent of the companies studied had initiated this procedure with remarkable success (see Figure 2.2).

Figure 2.2 Mortality of New Product Ideas



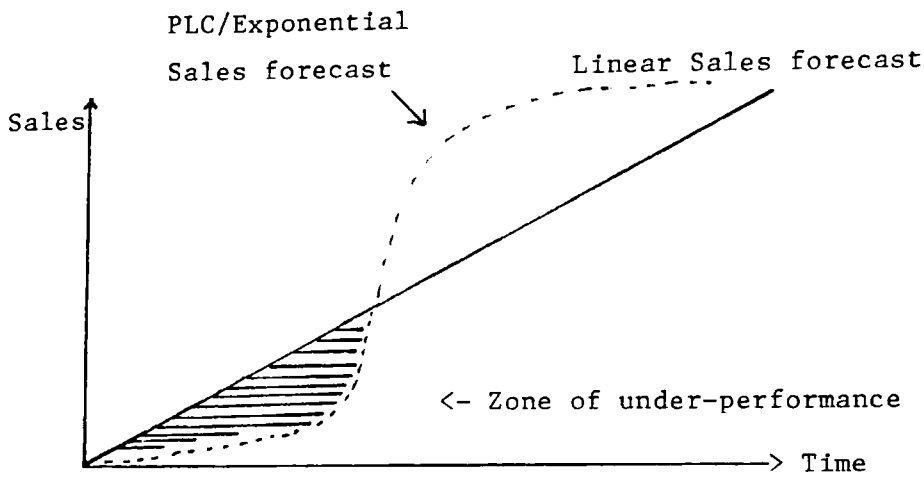
Source: Booz, Allen, Hamilton (1982) New Product Management for the 1980s

The basic requirements prescribed, in line with strategic objectives, encouraged an extremely effective "elimination" of ideas which in the past cluttered and protracted the NPD process.

In considering the second of Kotler's conditions of NPD, to our knowledge, there is no comparable research. As Baker (1983b) notes, the judgement as to whether or not a new product has been a success rests largely on whether or not predetermined sales targets are met. He goes on to elucidate the problems facing the many firms believed to use linear extrapolations for sales targets (see Figure 2.3).

The speed of success is over-estimated, and there is a danger that the product will be dropped too soon. While there are few easy solutions to this problem, at least it is highlighted. Clearly not all product eliminations occur at the "decline" stage of the life cycle. Unlike the rest of the NPD process however, the inevitable decisions about new product deletion and the implications this entails for achieving strategic objectives has been paid scant attention.

Figure 2.3 Sales Patterns for New Products

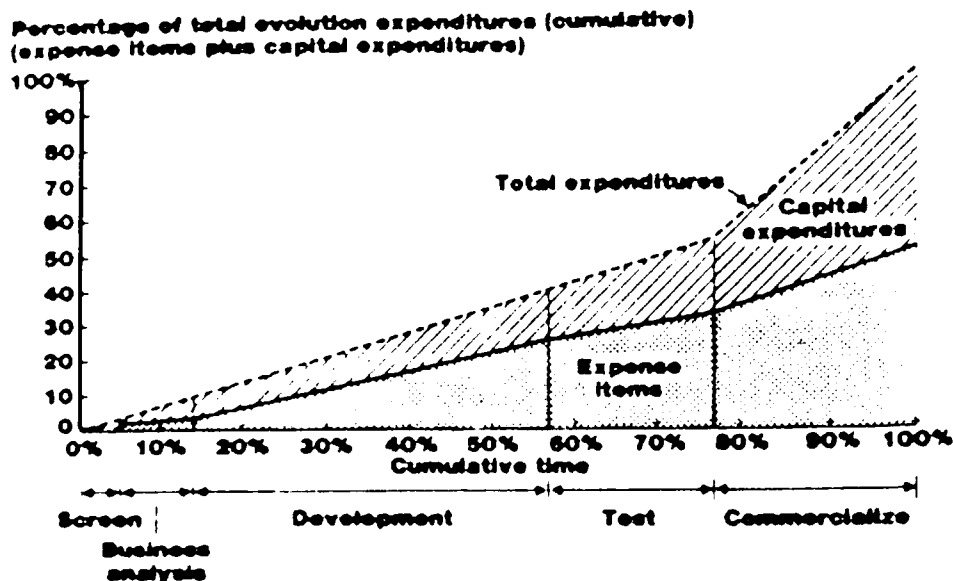


Source: Baker, M J, (1983b) Market Development

The third condition mentioned by Kotler, that life cycles of new products are becoming shorter entails clear implications for corporate strategy and the product elimination decision alike. Strategic analyses of the environment must accommodate this development while the ensuing strategy must give clear guidelines for the elimination of these fast-evolving products.

In relation to the NPD process, it is interesting to note that the pre-launch decision rules seem to be more apparent than post-launch decision rules. This can perhaps be explained by the increase of expenditure from the beginning to the end of the process (see Figure 2.4).

Figure 2.4 New Product Development Costs



Source: Management Research Department, (1982), Booz, Allen & Hamilton Inc. in Baker, M J (1983b) Market Development

Total expenditures rise very sharply at the commercialisation stage, representing considerable financial and psychological commitment, which would also have to be "eliminated" or "redirected". This is central to the elimination problem as recent research efforts in the subject have shown (Gauthier 1985; Kent 1984; Avlonitis 1980).

To sum up then, while product policy (new product development and product differentiation) stemmed from the same business environment that engendered strategic analysis and planning, NPD has received far more attention as a process of strategic importance than either product modification or product elimination processes. The point of departure of the remaining section, then, is to situate the product elimination decision in the context of overall corporate strategy.

2.5 The Strategic Value of Product Elimination

As mentioned above, it is the synoptic - or comprehensive - view of strategic planning which is adopted in the current review. Before going on to detail the contribution of product elimination to strategic planning, a brief overview of its contents follows.

Glueck and Jauch (1984) reduce the strategic planning process to the following essentials:

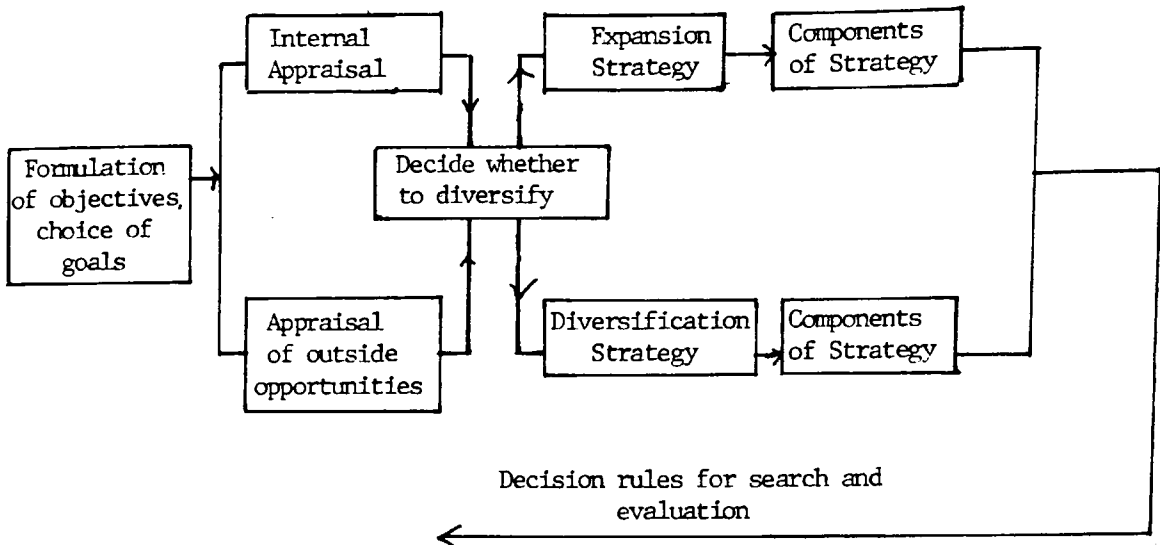
1. Defining the mission and objectives.
2. Environmental analysis of threats and opportunities.
3. Internal analysis of strengths and weaknesses.
4. Evaluation and choice of appropriate strategy.
5. Implementation: resources, organisation, administration.
6. Evaluation of results and strategy.

Ackoff's (1970) "parts of planning" include

1. Ends: specification of objectives and goals.
2. Means: selection of policies, programmes, procedures and practices by which objectives and goals are to be pursued.
3. Resources: determination of the types and amounts of resources required, how they are to be generated or acquired and how they are to be allocated to activities.
4. Implementation: design of decision-making procedures and a way of organising them so that the plan can be carried out.
5. Control: design of a procedure for anticipating or detecting errors in, or failures of, the plan and for preventing or correcting them on a continuing basis.

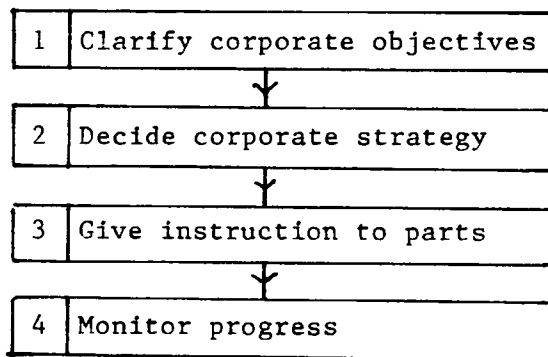
The strategic process of Ansoff (1968) is shown in Figure 2.5, while Argenti's more general version is given in Figure 2.6.

Figure 2.5 Ansoff's Decision Schematic in Strategy Formulation



Ansoff, I (1968) Corporate Strategy

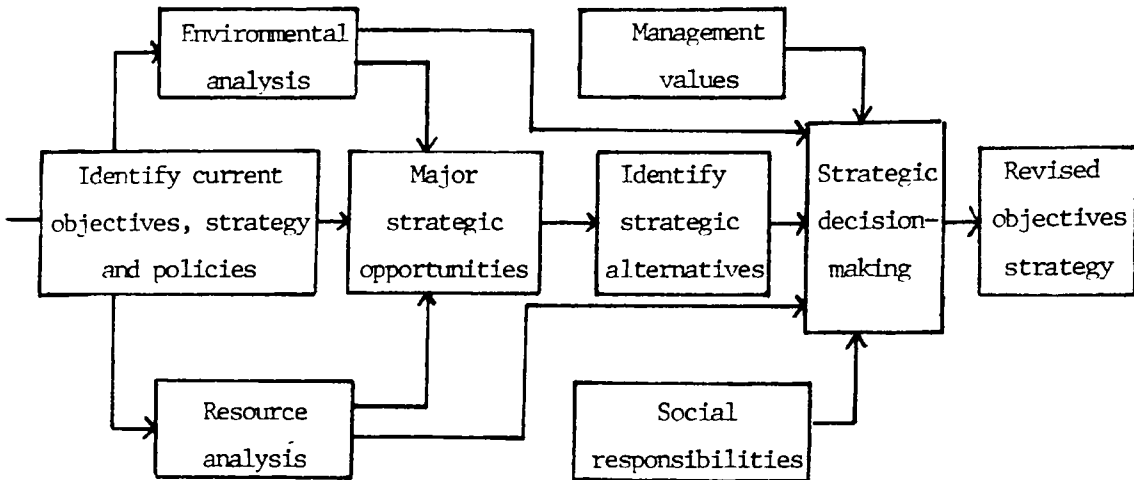
Figure 2.6 The Corporate Planning Process



Argenti, J (1974) Systematic Corporate Planning

Figure 2.7 gives the strategic model proposed by Andrews (1965), while Figure 2.8 presents Hussey's more iterative representation of the strategic planning process.

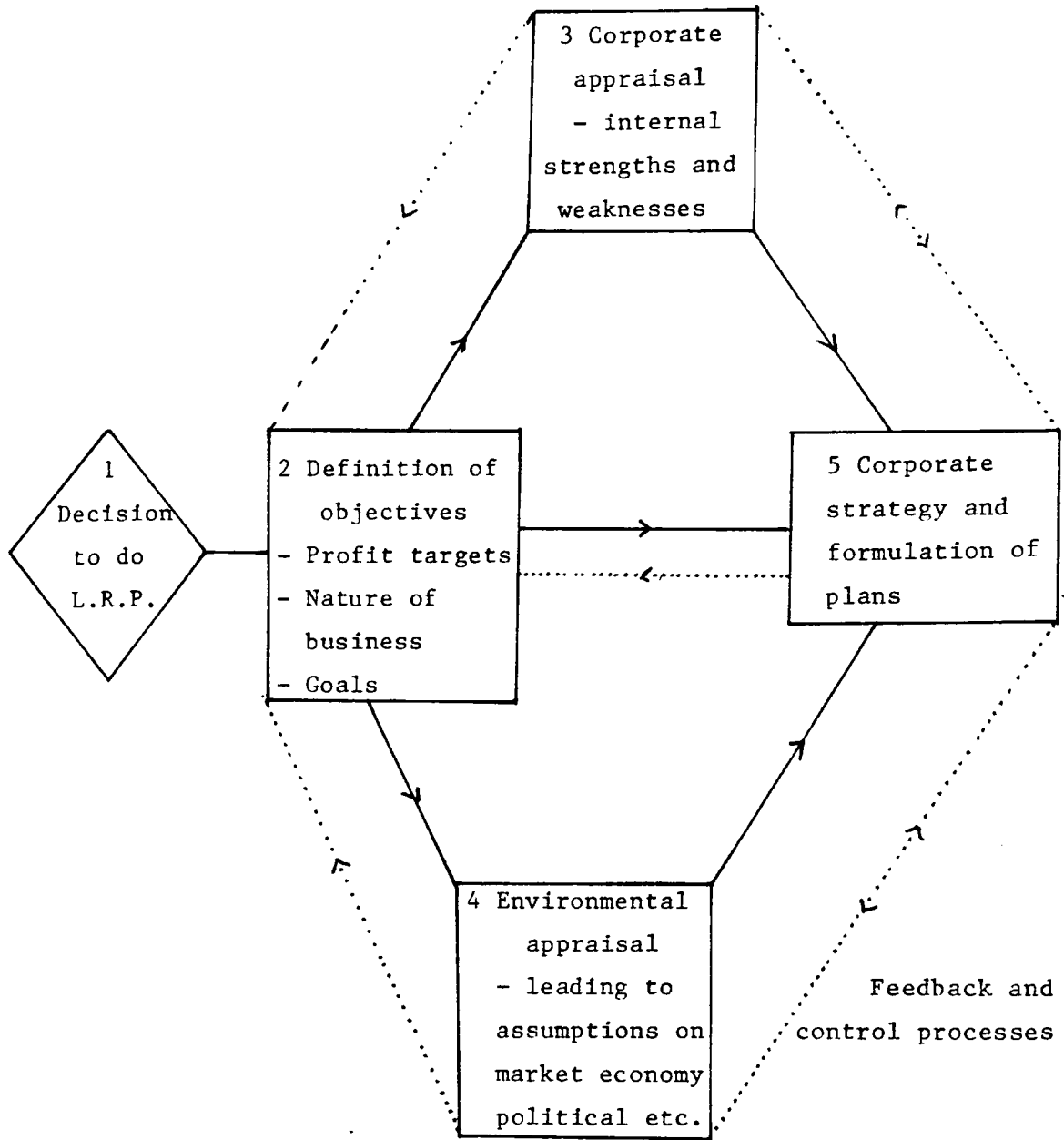
Figure 2.7 Andrews' Model of Strategic Planning



Andrews K R et al, (1965) Business Policy: Text and Cases

Although this sample of models varies in detail from one author to another, it is plain that the models are similar in many respects. However, if their contents are to be distilled into a basis for discussion, it should be said that, as models of a process which is as dynamic as the environment it attempts to control, they defy comprehensive analysis. In addition, the models are iterative, and while the iteration needs to be interrupted in order to be analysed and discussed, one must be mindful of the artificiality this imposes on the discussion. Such caveats notwithstanding, the current work attempts to capture the essence of these models by considering a) defining the business; b) strategic objectives; c) strategy selection techniques. Each will be discussed in relation to the product elimination decision process.

Figure 2.8

Hussey's Total Planning Process

Hussey, D E (1971) Introducing Corporate Planning

2.5.1 Defining the Business

Defining the business, sometimes called "defining the business mission" is often the "first" step in the strategic planning process. It determines the purpose and direction of the firm (Baker 1983a).

"When the mission of a business is clearly defined, it gives those inside and outside the company an indication of what the company is about."

Glueck and Jauch (1984) p. 51

Organisational literature deals with mission through the general rubric of "strategic choice", where an organisation's actors select the boundaries of operations according to such environmental factors as number of competitors, suppliers, market growth in such a way as to capitalise on the organisation's strengths (Cyert and March 1963; Child 1972). Thus, managers need not merely react to the environment, but through selecting environmental boundaries, can "change" it.

The work of Miles and Snow (1978) has shown how firms select their boundaries; this they have called "strategic orientation". They identified four different strategic orientations, which explained aspects of company behaviour - especially with regard to products. The first strategic orientation, "Defender", was associated with manufacturing efficiency, strong production and financial management, offering a limited range of products. A second strategic orientation, "Prospectors" concentrated on product development, exploiting perceived market opportunity. While the product-market domain of these organisations was large, it underwent periodic redefinition, and with their emphasis on being "first in" they did not achieve market strength in all areas.

"Analysers", a third type of strategic orientation combined the defensive and prospective postures maintaining a stable, limited line of products and services, yet simultaneously moving out quickly to follow a carefully selected set of the more promising new developments in the industry.

A fourth type of orientation, "Reactors" did not appear to have any consistent product-market orientation. This type of organisation responds to environmental pressure.

Two of these strategic orientations are reminiscent of Chandler's (1962) organisation types. The "Defenders" approximate the Type I organisation where a single product or very limited product range is offered, while "Prospectors" parallel the Type II organisation, which is more diversified, with a decentralised product structure.

The salient feature of these typologies in this analysis is that the "strategic orientation" is ultimately described in terms of product-markets and carries with it direct implications for product policy and deletion decisions.

Ansoff (1968) also describes the business of the firm in terms of "product-market scope", which specifies those industries to which the firm confines its product-market position. The product-market scope attempts to specify the "common thread" - "a relationship between present and future product-markets which would enable outsiders to perceive where the firm is heading and the inside management to give it guidance".

Consideration of product-market scope gives rise to the growth vector matrix (see Figure 2.9). The matrix implies concepts in many ways similar to those implied by the typology of Miles and Snow (1978).

Figure 2.9 Ansoff's Growth Vector Matrix

Mission \ Product	Present	New
	Market penetration	Product development
Present		
New	Market development	Diversification

Source: Ansoff, H I (1968) Corporate Strategy

In the matrix, "mission" essentially describes the market scope, and Ansoff's aim is to encourage strategic thinking about products and markets. "Market penetration" may be likened to the "Defender" strategy while "product development" is similar to the "Prospector".

In Marketing literature, the firm's business definition is also widely recognised as being of primary importance (Abell 1980; Anderson 1982; Wiersema 1983; Frazier and Howell 1983).

In Levitt's (1960) seminal article, "Marketing Myopia", it is argued that broad market-based definitions are required, exemplified in the instance of railways viewing themselves in the "transportation" business, rather than in the narrower "railway" business. Similarly, petroleum companies would be in the "energy business" rather than petroleum business. Such perspectives are recommended as they focus on customer needs, present and future, which are less ephemeral than the means by which they are satisfied.

In marketing literature definition of the product-market is also described as defining a "niche". Much has been said recently about the enhanced competitive position which companies identifying and serving a niche in the marketplace derive (South 1981; Chaganti and Chaganti 1983; McKinsey 1983; Hooley and Lynch 1985). The promotion of success is achieved by the firm conforming to its niche, largely through its product range (Aldrich 1979).

Both Abell (1980) and Frazier and Howell (1983) conclude that the typical discussion of business definition as it influences the general direction of the strategic plan is too limiting. These authors argue that the way the business is defined influences a host of other strategic and operating decisions - especially those decisions concerning the breadth of the product range.

From this brief overview of some of the issues pertaining to this first step in strategic planning, it is clear that product decisions are implied through the definition of the business. In the current study we are concerned with the implications of mission definitions for product deletion decisions in particular.

We can infer that the "Defender" organisations of Miles and Snow (1978) may have tight financial control over products, ensuring that their cost advantage is not eroded by the proliferation of products. Similarly "Prospectors", aiming to be first in and experiencing new product failure may well eliminate many products that never achieved their targets.

The breadth of definition itself serves to dictate the breadth of the product range. The wider the definition is in scope, the greater the chances for product differentiation. The greater the differentiation, the greater the need for efficient product elimination (Rumelt 1974; Pims 1977).

The very choice of product-markets may also influence the amounts and nature of product elimination decisions. One would expect that, in advanced consumer goods industries and fast-changing technological environments, shorter PLCs would entail more product phasing (Saunders and Khan 1986).

2.5.2 Strategic Objectives

Strategic or corporate objectives have been defined by most of the leading writers in the field, and as with all things strategic, variations abound. Ansoff (1968) defines strategic objectives as "the decision rules which enable management to guide and measure the firms' performance ..." (p.43)

Argenti (1974) distinguishes corporate and other objectives by the fact that the former validate all other activities of the organisation without exception. Thus, if profitability is the only corporate objective, then all other company activities are subjugated to it. However, as Drucker (1961) pointed out "to manage a business is to balance a variety of needs and goals" (p.52) and Glueck and Jauch (1984) echo this in saying "all but the simplest organisations pursue more than one objective" (p.54).

Most writers, however, do not suggest that all corporate objectives are equal. Ansoff (1968), Argenti (1974), Ackoff (1970), Walley (1971) and Steiner (1969) all propose some kind of hierarchy of objectives, where the profit or economic objective is fundamental and where other specific objectives also exist. These "other" objectives have been labelled "non-economic" (Ansoff 1968), "ethological" (Argenti 1974), "stylistic" (Ackoff 1970). In contrast, Hussey (1971) and Drucker (1961) view the economic objective as one of a family of equally important strategic objectives. Such a perspective does not hold with the contention that the primary objective is profit, and is supported by both the Stakeholder and Consensus theories. The essence of both these theories is that it is not only the shareholders that stand to benefit from the existence of an organisation. Workers,

shareholders, managers, customers, suppliers, the State, the community all have a stake in the firm and all are entitled to "some appropriate benefit" which is enshrined in the objectives of the organisation.

Having somewhat cursorily considered the key arguments and philosophies of strategic objectives, we will look more closely at their nature to assess their implications for product decisions in general. The subsection that follows deals with the "basic economic objective" or purpose of the business. The subsequent paragraph deals with non-economic or ethological objectives.

2.5.2.1 Economic Objectives

The neo-classical objective of profit maximisation entails implications for marketing decisions of all kinds, including the product elimination decision. Where profits are to be maximised, product output is increased to the point where the incremental cost of producing the goods is balanced by the incremental revenues generated. This supposes that the resources employed can be adjusted finely, increased or decreased, that more or less of the same product or that more or fewer products can be produced, in order to sustain optimum revenue levels. But as Ansoff (1968) points out, resources are rarely that flexible and products cannot be manufactured in readily adjustable amounts. While the theory of profit maximisation does provide a normative cut-off point, it also assumes that the information needed for its identification is to hand. This assumption is not only theoretically untenable, but also challenged by Avlonitis (1980), who described in detail the information available to, and used by, managers in a sample of 20 companies.

In all fairness, however, the concept of profit maximisation as an adequate corporate objective is largely discredited.

In the entry "Profit Maximisation" of the MacMillan Dictionary of Marketing (1984), an important point is made: many businessmen think of profit maximisation in terms of making profits larger in a relative, rather than absolute, sense. This view is endorsed by Argenti (1974), Steiner (1977), Ackoff (1970), to name but a few, where the concept of maximisation is replaced by the relative notions of "average", "required" or "minimum" profit levels. This alternative portrayal of profit-seeking behaviour is coined "satisficing" (as opposed to optimising) and stems from the seminal work of Simon (1957) and Cyert and March (1963). This work, a field of study in its own right, stresses the role of individual aspirations in the managerial selection of goals. It has spawned many of the non-economic objectives dealt with in the next section, but of more immediate interest, it has introduced the notion of relativity to the economic objective.

Whatever the final profit objective that is set, it should provide shareholders with an appropriate rate of return, not less than they might expect to achieve from any other investment. Whatever figure is deemed "appropriate", it is nonetheless what is left of revenues from sales when the cost of generating those sales is deducted. At the simplest level, there are two ways of increasing this profit figure: increasing sales at a greater rate than increasing cost - a growth strategy based on economies of scale; or by bringing down the cost of sales. It is the latter strategy which product elimination can contribute to. The importance of profit objectives for elimination decision-making behaviour becomes apparent when one considers the impact it has on the cost of sales. While maintenance of profitability may not be achieved by reducing costs in a business operating in high-growth markets (where increasing revenues is more important) in low-growth markets, good capacity utilisation, low inventory, high sales per employee and process R and D (to reduce costs) all contribute to increasing margins (MacMillan, Hambrick and Day 1982).

The elimination of a slow-moving or low-profit product, or range of products, not only brings about the elimination of its direct production costs, but also relieves the organisation of a host of hidden or indirect costs, which disappear into the battery of overheads. These costs include (i) the cost of change-overs in production lines and the concomitant cost of machine "down time", (ii) the cost of handling small production batches, (iii) the cost of inventory of raw and finished goods for slow-moving lines, (iv) the opportunity cost for physical, financial and human resources tied up in the lines.

The benefits of following an elimination strategy in pursuit of corporate profit objectives have been reaped by several large companies. Apricot, the large computer manufacturer has recently returned to the "old verities" of profit-seeking. Central to its strategy is the reduction in the product range from 13 to seven models (Financial Weekly, 1986). Similarly, Cadbury Schweppes reduced its product range from 177 to 33, with a dramatic increase in trading profits (The Sunday Times, 1984).

The opportunity cost of a product is the potential profit that a new or modified product might generate if the physical, financial and human resources absorbed by the existing product were taken over.

This concept of opportunity cost is particularly relevant to a long-term perspective of profitability. To remain profitable in the long-term, as Ansoff (1968) points out, the firm must continue to renew itself in terms of products, markets, management, plant and equipment. Elimination of high-cost activities can help prune the business in readiness for healthy growth.

2.5.2.2 Non-Economic Objectives

A review of the major contributions to the literature dealing with "non-economic" objectives reveals a picture of how diverse they can be. Drucker (1961) mentions seven: market standing, innovation, productivity, physical and financial resources, manager performance and attitude, worker performance, public responsibility.

Ansoff (1968) writes of social responsibility and constraints, both of which are seen to modify management behaviour.

Early studies into the nature of strategic objectives also revealed a number of non-economic, or ethological objectives (Dent 1959; England 1967). These include: marketing and sales objectives; efficiency and innovation objectives; employee-related objectives - which include mergers and acquisitions.

It is fair to say, however, that although a great many books and articles have been written on strategic planning, relatively little can be found to describe empirically the non-economic objectives or issues that are of concern to the modern corporation. This section will therefore use the examples listed above to postulate on the implications of non-economic or "ethological" objectives for product elimination.

Social Responsibility Objectives

Ansoff (1968) divides social responsibility into two themes: enlightened self-interest and philanthropy. The first is where the company takes upon itself to serve the broad purposes of society. The second is where it lends support to non-profit institutions. Argenti (1974) suggests that social-related ethological objectives might define the company's behaviour towards the state, foreign states or the local community. These types of objectives often form part of the company's desired image, and as such it may be necessary in some instances to eliminate a product because of its incompatibility with the public image, or because of its poor social connotation.

This, of course, may operate in reverse. To be of service to the community, it may be necessary to continue to offer products and services which are not achieving financial objectives. This instance is well illustrated by the case of British Rail, where the high cost-low turnover train routes have to be maintained to provide a service. The cost of providing these services, however, cannot be made good by charging more for the busier services, as they would be rendered less competitive.

Innovation and Efficiency Objectives

Examples of innovation and efficiency objectives given by Glueck and Jauch include "be the leading innovator in the industry" and "be the most efficient firm in the industry" (p.77).

Drucker (1961) makes the point that two kinds of innovation exist in businesses: innovation in the product or service; innovation in the various skills and activities needed to supply them. He suggests innovation goals might include:

1. new products or services needed to attain marketing objectives.
2. new products or services that will be needed because of technological changes that may make products obsolete.
3. product improvements needed both to attain market objectives and to anticipate expected technological changes.
4. new processes and improvements in old processes needed to satisfy market goals.
5. innovations and improvements in all major areas of activity, to keep up with advances in knowledge and skill.

The objectives that have implications for deletion are primarily 2 and 5. Where new products are required for the attainment of market objectives it is likely that they will be net additions to the range. Similarly, new processes for meeting market goals do

not necessarily provoke any change in the product line. Where a company, however, wishes to anticipate change, the situation may be somewhat different.

The corporation that wishes to lead innovation, that invests in research and development for that purpose, successfully achieves its aim with many new product introductions and a rapidly-changing product range where "older" products are dropped. It is not unreasonable, therefore, to suppose that where innovation and efficiency objectives feature in the strategic thinking of a corporation, the number and nature of product eliminations may be affected. However, efficient operations can be achieved in a variety of ways, and new products can be continually developed in growing markets to meet demand without a parallel number of product deletions.

Product elimination is a business function which contributes to efficient operations, as we have explained above. Executive, sales and administration time is not spread inefficiently by too many marginal products. Warehouse and distribution space is also used more efficiently where fewer products are handled.

Employee-Related Objectives

Employee-related objectives include remuneration levels; working conditions; satisfaction of the workforce and aims regarding unionisation (Glueck and Jauch 1984). Drucker (1961) talks of objectives for worker performance and attitude, pointing out that this is a neglected area of managerial responsibility, as well as being difficult to measure. Among those aspects of employee performance which are measurable, he includes: turnover, absenteeism, safety, calls on the medical department, number of grievances.

Ansoff (1968) mentions objectives for numbers employed as a growth objective; this is clearly also related to employee objectives. In many cases, dropping a product or products from the line will involve alterations to the workforce: its size, the duration of a working shift, or of a working week. Should employee-related objectives be highly prioritised, the decision to drop a product may be postponed, if not abandoned. While a few authors have dealt with how management deals with trade union intervention in the decision to drop a product, fewer still have studied to what extent responsibilities and obligations towards the workforce influence managerial thinking on product elimination (Hise and McGinnis 1975; Avlonitis 1980).

Marketing and Sales Objectives

Strategic marketing objectives appear to emphasise the sales and standing of a product (or a company) relative to the others competing in the market. Ansoff (1968) specifies seven surrogate measures which contribute to the continued improvement of the firm's competitive position. Four resemble the marketing objectives mentioned by other authors:

1. Continuing growth of sales at least at the pace of the industry to enable the firm to maintain its share of the market.
2. Increase in relative market share to increase relative efficiency of the firm.
3. Continuing the addition of new products and product lines.
4. Continuing expansion of the firm's customer population.

Drucker (1961) states that in most businesses, seven distinct marketing goals should be set:

1. The desired standing of existing products in their present market, expressed in dollars as well as in percentage of the market, measured against direct and indirect competition.

2. The desired standing of existing products in new markets set both in dollars and percentage points, measured against direct and indirect competition.
3. The existing products that should be abandoned for technological reasons, because of market trends, to improve the product mix or as a result of management's decision concerning what its business should be.
4. The new products needed in existing markets - the number of products, their properties, the dollar volume and the market share they should gain for themselves.
5. The new markets that new products should develop - in dollars and in percentage points.
6. The distributive organisation needed to accomplish the marketing goals and the pricing policy appropriate to them.
7. A policy objective measuring how well the customer should be supplied with what he considers value by the company, its product, its sales, its service organisation.

Glueck and Jauch (1984) surveyed three studies of business objectives by Dent (1959) England (1967) and Shetty (1979).

Potential Marketing and Sales objectives in these studies included:

1. Maximise the company's rate of sales growth.
2. Provide the best quality products or services possible.
3. Be a market leader - for example first in the market with new products or services.
4. Have the most satisfied customers.
5. Maximise market share.

McKay (1972) identifies three marketing objectives:

1. Enlarge the market.
2. Increase market share.

3. Increase profitability. (It should be said that most marketing textbooks acknowledge the primary corporate objective of profitability, and many marketing specialists view profit generation as a primary marketing task.)

Implicit in all these goals is the concept of a portfolio of products vying for the share of the market with other product portfolios. We shall return to this important concept in the discussion of strategy formulation and analytical tools.

Returning, however, to the focal point of the marketing objectives outlined above, namely the comparative share of the market accounted for by a company's product(s), implications for eliminating products can be seen.

First, if a company wishes to increase its overall market share relative to the competition, it is likely that it will have to offer a breadth of products comparable to that of its major competitors. (To lead the market with a narrower range of products would suggest that an extraordinarily strong position is held in those segments where the company operates). Where there is a need to offer the same range of products as competitors, there may well be less pressure on product deletion. Naturally, a company may decide to compete in a few key market segments to aim to dominate them, but this is not the same as a corporate objective to "maximise market share".

Second, expansion of the product range and expansion of the firm's customer base are not entirely compatible with product elimination. While existing products can be marketed to new customers and markets, continued increase is unlikely to occur without attention to the needs of these new buyers. Products may then have to be modified or adjusted to meet these needs more effectively, which adds to the size of the range.

Third, marketing objectives must take cognisance of the other non-economic issues, such as technological innovation, which, as Drucker points out, may lead to the decision to abandon a product due to technological obsolescence.

Fourth, marketing objectives are also concerned with market trends, which in turn may point to the necessity for abandoning certain product lines.

Fifth, objectives such as "having the most satisfied customers" and "service objectives" affect the breadth of products held in stock for customers, the ability to supply products quickly, as well as the supply of spare parts and replacements. The higher the service level set, the more products are made, held in stock and the greater the cost to the company. If such objectives are prioritised it is reasonable to assume that product deletion will not be a priority strategy.

Marketing objectives tend to focus on growth of sales and market share and carry with them objectives for products and markets. This said, they have profound implications for the elimination decision, if that decision is carried out in pursuit of the overall objectives of the company. Clearly, objectives concerning changing technologies and market trends may induce rapid changes in the product line with both additions and deletions. On the other hand, objectives for growth in sales and market share, or for first-class service levels may well reduce the need for an active elimination policy.

Other Corporate Objectives

Shetty (1979) includes in his list of corporate objectives those which pertain to growth through expansion of the company's asset base, rather than through an increase in sales: increased diversification and becoming a multinational. Reid (1985) also mentions diversification as a corporate goal in Scottish companies.

Similarly, acquiring another company, or merging, are ways of expanding. Strategic moves such as these dramatically affect the range of a company's products.

Avlonitis (1982) describes "mergers and acquisitions" as one of eight "problem situations" that led to product deletion decisions in the engineering companies he studied.

As Ansoff (1968) notes, non-economic objectives exert a secondary, modifying and constraining influence on management. One purpose of this subsection has been to explore how non-economic objectives may serve to override the economic reasons behind product elimination. Another purpose has been to illustrate the way in which non-economic objectives can actually provoke the decision to drop a product.

So far in our discussion of corporate planning we have considered the effect of business definition - or company mission - and strategic objectives on one aspect of product policy: product elimination. The final aspect of the corporate planning process to which we now turn is the formulation of corporate strategy, the means of achieving corporate objectives.

2.5.3 Strategy Selection Techniques

Change and survival are elements essential to the study of business strategy (Levitt 1960; Ansoff 1968; Drucker 1961; Argenti 1974; Glueck and Jauch 1984; Brownlie 1985). If they are to survive, organisations must not only adapt to change, but also harness the forces that, together, represent change. These forces include technological innovation, the shifting structure of international markets, the protean nature of demand in many important markets, all of which act in concert, to increase both the risk and uncertainty facing companies and the breadth of strategic options they might follow.

Business strategy is the means by which companies seek to monitor and anticipate change in order to adapt their capabilities to match the demands of an unstable environment (Mintzberg 1979). Marketing Myopia, the influential piece by Theodore Levitt (1960), was strongly critical of a "myopic" view of the relationship a firm has with its environment, which takes no account of the change in consumer demands. Instead, he proposed that the firm reappraises its relationship with the environment with a periodic review of its products and services in the light of changing market needs. Similarly, Ansoff (1968) warns against the dangers of product obsolescence and saturation of demand. Ultimately, the business of strategy is concerned with the way in which corporate resources are allocated in the face of change, and with the decision to invest in certain product-markets and disinvestment of others (Foxall 1984). This is the "periodic reorientation" to which Ansoff (1968) refers.

The "periodic reorientation" requires managers to seek information which will help them in defining product-markets and creating and marketing products compatible with market demand. This, in turn, involves the appraisal of strengths and weaknesses, the identification of environmental opportunities and threats. In recent years, a number of analytical tools have been developed to facilitate this process, to assist the decisions of where and when to invest in a new product, as well as when to withdraw. Clearly, such a perspective bestows upon the product elimination decision the status of a strategic decision. And yet, studies of the elimination decision suggest that it is much more an ad hoc, operational activity. (Rothe 1971; Avlonitis 1980; Hise, Parasuraman and Viswanathan 1983). These two perspectives are not mutually exclusive as long as strategic policies exist with regard to any products which appear to be candidates for elimination, so that clear-cut decisions can be made, when and if the time comes. Unfortunately, from the limited evidence to hand, this does not seem to be the case (Avlonitis 1980; Gauthier 1985). Elimination decisions are characterised by delay, uncertainty, lack of information, with a tendency to be swept under the carpet.

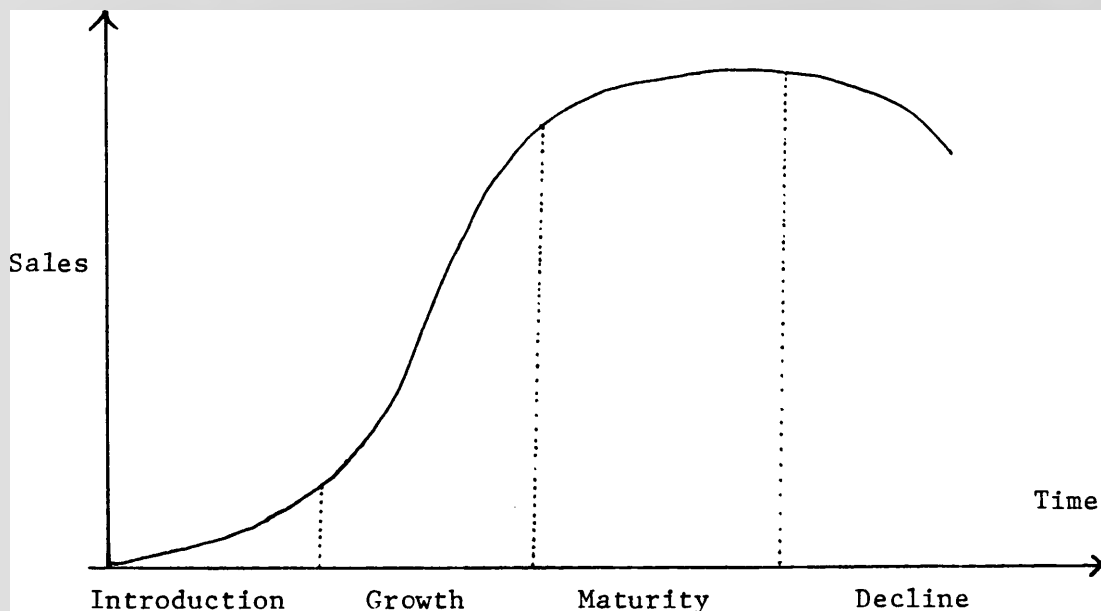
The purpose of this section is to deal with analytical tools used in the strategic planning process to outline their implications for the deletion decision.

2.5.3.1 The Product Life Cycle Concept

In 1950, Joel Dean wrote an article on the pricing of new products, where he introduced the concept of the Product Life Cycle. The Product Life Cycle describes the sales and profits of a product over time, and attributes different properties to both the product and the market over the timespan.

The first major contributions to the PLC theory by writers like Levitt (1965), Buzzell (1966), Booz, Allen and Hamilton (1968) described distinct stages in the sales and profit history of the product, and the concomitant problems and opportunities which face management at each stage. While good detailed descriptions of the PLC stages can be found in any major textbook (Baker 1985, Kotler 1985, Cannon 1986) the "typical" PLC curve is reproduced below and a brief description of each of the stages is given.

Figure 2.10 The Stylised Product Life Cycle Curve



Introduction

At the introductory stage, sales growth is sluggish: the most salient variables of the stage include: the number of innovative customers; the degree of "newness" of the product; the ease with which wide distribution can be obtained; the ease of extending production capacity; the quality and reliability of the product. Despite a relative lack of competition the product's profitability is low - or negative - because of the low levels of output coupled with heavy promotional costs.

It is generally considered to be a long stage, especially in industrial markets (Baker 1975).

Growth

If the product meets with market acceptance and is successful, it passes to the growth stage. As its name suggests, sales grow steadily, and the product becomes profitable, with profits also increasing steadily; the cost of promotion is spread over a larger volume of product and the manufacturing costs decrease more quickly than does the price of the product. In the marketplace, more competition arrives with the advent of me-too products, the need for differentiation and market segmentation. As the stage progresses, higher levels of promotion are needed to stave off increasing competition, and the first product improvements may take place.

Maturity

When sales stop rising exponentially, the product has reached the mature stage. Sales may well still be rising, the product has been tried by a majority of customers. Further sales now come from repeat purchases or the tapping of new markets. Completion continues to increase as more companies seek to derive some benefit from the product's success. Reinforcing the promotion, modifying the product and decreasing the price are key competitive tools, but entail a proportional decline in profits. The length of the stage depends largely on marketing skills (Doyle 1976; Kotler 1980).

Decline

The decline stage is characterised by decreasing sales and profits. Declining sales may be caused by technological advances and innovative products or changing market tastes. Profits also decline because overcapacity in the market ensures that sales levels will not cover costs.

The value of the PLC is that it packages a good number of product and market variables into four easy-to-understand labelled stages. By doing so it aids the process of strategic analysis and proffers advice regarding the marketing mix, and other business functions.

Kotler (1980) devotes a chapter to specific product strategies to be adopted throughout the life of a product, referring to issues like product modification or "relaunch", pricing, advertising and forecasting. Berenson (1967) discusses the implications the PLC entails for purchasing, while Davis and Brown (1974) discuss its effect on logistics. Clearly, the concept is vital to any discussion of product elimination, although an interesting paradox emerges. In tracing the trajectory of a product's life cycle curve, theoretically at least, the point at which it enters the decline stage can be identified. This done, managers are sufficiently aware of their competitive position and can decide at which point they wish to eliminate the product. Several strategies have been proposed, including "Run-Out" (Talley 1964); "Pricing" (Kline 1955) and "Elimination" (Alexander 1964; Kotler 1965; Avlonitis 1983). However, these articles associate product elimination exclusively with the late mature and decline stages of the PLC. The authors, as well as those who confine consideration of the deletion decision to the few pages in a textbook dealing with stage four of the PLC (Kotler 1985; Bell 1979) forget that the PLC represents products that run the course, not those that fail to make it. Drop decisions are taken frequently at earlier stages than the decline stage, (Avlonitis and James 1982). This is especially true if one considers the usual "profit" curve - where

profits fall in the early maturity stage, or even towards the end of the growth stage. On the other hand Michaels (1971) explains the concept of "petrification", which occurs towards the end of the life cycle, with low sales but steady profits due to low investment and running costs and a core of loyal customers.

Before leaving the Product Life Cycle concept, mention should be made of the criticism it has received. Comments have generally fallen into two areas. Firstly, it is not clear whether the PLC is valid at the brand or item level, or whether it is more appropriate at the level of product class or category. The much-cited article by Dallah and Yupseh (1976) draws attention to this problem but concludes that there is very little to commend the PLC - at all! Their point, shared by Baker (1983), is that the PLC is dependent upon a number of uncontrollable environmental issues such as the rate of technological change and the intensity of competition. It is also subject to the ability of management to arrange the marketing mix elements in such a way as to prolong the useful life of a product.

Secondly, the PLCC makes little reference to the marketplace. If markets are to be defined in terms of customers' needs, then analytical tools which purport to describe the health of the product should take the nature of the given markets into consideration (Sissors 1966, Enis, La Garce and Prell 1977).

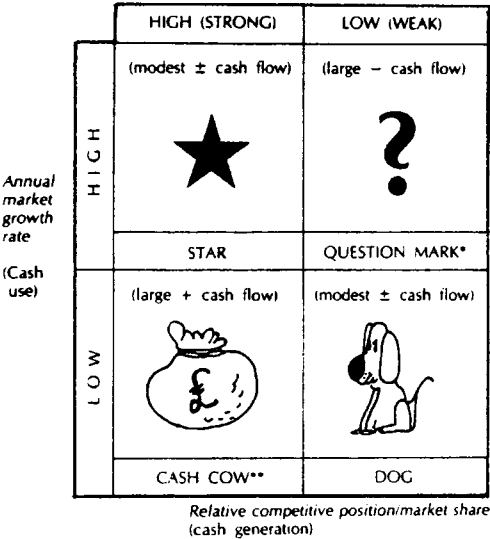
2.5.3.2 The Growth-Share Matrix

The Growth-Share Matrix, sometimes called "The Boston Box" is an analytical tool which focuses on market share and market growth, in order to classify products. Such a classification is precursory to the investment decisions and the allocation of resources with which strategic planning is primarily concerned.

At its most basic level, the allocation of resources is about matching cash use and cash generation in such a way as to achieve corporate objectives. (If corporate objectives include the generation of profit, then the generation of cash must exceed its use.)

The Boston Box relates cash flow (the difference between use and generation) to market share and market growth so as to produce four different categories to which products may belong. (See Figure 2.11).

Figure 2.11 The Business Portfolio and Associated Cash Flow for Successful Products



Source: Baker (1983a) Marketing Theory and Practice

Among the clearer explanations of this arrangement is Brownlie's (1985):

"The lines which determine the high and low divisions of each dimension are located so that products in the upper left and lower right quadrants experience a roughly balanced cash flow, while those in the upper right quadrant use cash. Those in the lower left quadrant generate cash." p. 175

The relationship between cash flow and market share is based on the "learning-curve" which suggests that the labour cost required to manufacture a product tends to decline systematically with increases in production (Wright 1936). By extension Hirschmann (1964), Henderson (1968), Hedley (1977) have found that this type of relationship is apparent for the total cost involved in manufacturing and marketing a product. This so-called "experience curve" postulates that those firms with the greatest accumulated experience will have the lowest unit costs and the highest profits. This was taken a step further by Hedley (1977), who relates high market shares with high profitability. Such a position is empirically confirmed by the PIMS studies (1974, 1975). Thus market share is taken as a surrogate measure of a firm's position on the experience curve and of its cash generation.

Market growth is used as a surrogate measure of cash use, since, (based on the PLC), products in fast-growing markets are assumed to require greater investment.

According to the matrix depicted in Figure 2.11, four product types exist, requiring four different strategies: Stars; Question Marks; Cash Cows; Dogs. Brownlie (1985) sets out the important characteristics of these, and for brevity and clarity, his summary is reproduced below in Table 2.1.

Table 2.1 Strategic Management Guideline

STAR	Market growth is rapid. Shake-outs will occur as firms jostle for competitive position. Large cash balances are generated but heavy investment is required to maintain market share growth and consolidate competitive position. Low margins may be essential to deter competition, but longer-term prospects improve as growth slows, when large cash returns should be obtained. If investment is cut back during growth to gain cash returns in the short/medium term the DISASTER sequence occurs, a STAR becoming a DOG.
CASH COW	A STAR becomes a CASH COW as market growth slows during maturity.
QUESTION MARKS	QUESTION MARKS are managed to gain market share and strengthen their competitive position. To do so considerable investment is needed since rapid market growth occurs and cash generation is low as a result of low market share. The initial step of the SUCCESS sequence occurs when a QUESTION MARK becomes a STAR because of market share gains. However, if growth slows and competitive position is still weak, a divestment is recommended. As a market contracts during decline because of, e.g., product substitution, a CASH COW becomes a DOG.
DOGS	DOGS have relatively weak competitive positions in low-growth and mature markets. In most cases they have little potential for gaining market share and are not very profitable. However where it is possible to obtain a relatively strong competitive position in a market segment, a modest cash return may be generated (CASH DOG). Liquidation of DOG products (SBUs) is usually recommended.

Source: Brownlie, D (1985) "Strategic Market Concepts and Models"
Journal of Marketing Management 1 (2).

The two product categories which are most obviously related to the product elimination decision are the Question Mark and the Dog.

The Question Mark in particular is difficult to handle since if the low market share cannot be changed it will absorb large amounts of cash indefinitely. The most obvious example of a Question Mark is the new product which gets off to a slow start. The key strategic decision is when to call a halt to "slow development" and prevent further cash loss. This decision cannot be explained by the Growth-Share analysis, since a large number of other variables, both controllable and uncontrollable, interplay. While the Boston Consulting Group draw attention to the unsuccessful new product, there is virtually no empirical evidence to suggest how this case might best be dealt with, and little normative theory to guide action.

According to the theory, Dogs have a poor competitive position, which condemns them to poor profits (Hedley 1977). The classic elimination candidate.

However, as Foxall (1984) and Avlonitis (1985) point out, the "unusual circumstances" that are "necessary" for allowing a Dog to stay in the range can often turn out to be not all that unusual. Foxall points to the need to maintain the effectiveness of the overall product portfolio, "whose elements may be bound together by all manner of synergistic effects which impinge upon customer choice and usage" (p.49), Avlonitis (1985) details a number of factors which impinge upon the abandonment of Dogs, including the need to maintain a full line of products; the existence of substitutes and the implications for the image of the company.

More generally, the BCG has been criticised most strongly in relation to its views on Dogs. Hammermesh and Silk (1979) show that it is possible to compete using Dogs. In the current climate of low economic growth, the "life blood of many firms is being supplied by products that the Business Portfolio rationale classes as dogs" (Brownlie 1985).

Such trends have engendered a hybrid concept entitled the "Cash Dog" - where competition is not mature and direct, but where there is a possibility of segmenting and differentiating to compete (Goold 1981). However, the way in which the Cash Dog can be developed as a strategic option is an issue which has not been subject to much empirical research or theoretical discussion.

The Growth-Share Matrix suffers from a number of limitations which are explained in detail by Day (1977). Of more immediate concern in the current discussion is the usefulness of the matrix as a strategic guide for product elimination decision-making. Given the points raised above, the position taken by the current work is the same as that adopted by Brownlie (1985) when he states that the application of the Matrix to strategic decision-taking is "in the manner of a diagnostic rather than a prescriptive aid". This said, it is not without value and interest to the manager, given its logic and intuitive appeal.

2.5.3.3 Alternative Approaches

In response to the shortcomings of the Growth-Share Matrix, two further, nine-cell matrices have been developed. Both use return on investment to gauge industry attractiveness, rather than cash flow. The first of these is called the Business Assessment Array, developed and deployed by the General Electric Company. The BAA Matrix is depicted in Figure 2.12.

Figure 2.12 The Business Assessment Array

Business Strengths

		Strong	Medium	Weak
Industry Attractiveness	High	Investment and growth	Selective growth	Selectivity
	Medium	Selective growth	Selectivity (improve & defend)	Harvest (manage for cash)
	Low	Selectivity	Harvest	Harvest

Source: Brownlie, D (1985) "Strategic Marketing Concepts and Models", Journal of Marketing Management, 1 (2)

The dimensions of "Industry Attractiveness" and "Business Strengths" comprise several factors, which are not considered by the BCG matrix. Specifically, industry attractiveness includes market size, market growth, market diversity, competition, vulnerability to inflation, cyclicalities of demand, customer finances, energy impact and international scope. Business strength is made up of size, growth, relative market share, profitability, profit margins, technological advantage, product quality, image, personnel vertical integration and productivity. Nine cells are achieved by the inclusion of mid-points on both dimensions. The result is a more finely-tuned indication of strategy. Instead of one "dog" three types of businesses require elimination. However, the fact that the three withdrawal options are more sophisticated does not mean that they do not escape the criticisms levelled at

the BCG matrix, and in the case of "low industry attractiveness - medium business strength" where rapid milking is prescribed, the strategy is at odds with the emerging Cash Dog concept.

The second nine-cell matrix was developed by the Shell Chemical Company, and is called the Directional Policy Matrix (DPM). The DPM also uses a number of variables to gauge business section prospects and company capabilities. These are shown in Table 2.2.

TABLE 2.2. Shell's Directional Policy Matrix Criteria

Business Sector Prospects	Company's Competitive Capabilities
Market Growth Rate	Market Position
Market Quality	Production Capability
Industry feedback situation	Product research & development
Environmental (Regulatory) aspects	

Source: Brownlie (1985). "Strategic Marketing: Concepts and Models", Journal of Marketing Management, 1 (2)

The DPM is shown in Figure 2.13.

Figure 2.13 The Directional Policy Matrix

		<u>Prospects for sector profitability</u>		
		Unattractive	Average	Attractive
Company's Competitive Capabilities	Weak	Disinvest 1	Phased withdrawal 4 Custodial	Double or quit 7
	Average	Phased withdrawal 2	Custodial (proceed with care) 5 Growth	Try harder 8
	Strong	Cash generation 3	Growth 6 Leader	Leader 9

Source: Shell (1975). The Directional Policy Matrix - A New Aid to Corporate Planning

With respect to the treatment of elimination candidates, the DPM suffers from the same drawbacks as the BAA, and ultimately the BCG matrices.

Specifically, they do not reduce the amount of managerial judgement regarding the outcome of product deletions, and regarding what constitutes a "balanced portfolio". More generally, they do not so much provide prognosis, as diagnosis. In this respect, at a strategic level, they are more helpful in the recognition of elimination criteria than in providing guidelines for decision-taking.

2.6 Summary

This chapter has attempted to situate the role of product policy into the overall framework of the firm. Within that, the role of one product decision, the product elimination decision has been considered.

In order to achieve this, the strategic process has been - somewhat artificially - broken down into three basic components: business definition, strategic objectives and strategy selection techniques. Each of these components is examined in relation to its implications for the product deletion decision.

The breadth of the business definition is considered to affect a firm's propensity to delete products, in that wide definitions can entail extensive product differentiation which magnifies the need for efficient product elimination. Indeed, the choice of product-market may influence the amount and nature of product elimination decisions.

The basic economic objective of a commercial organisation is felt to enhance the case for systematic, effective, product deletion, given the often disproportionate costs (both direct and indirect) accounted for by marginal products.

Non-economic objectives, it is argued, also affect the nature and number of product elimination decisions in the company. Strategy selection techniques like the Growth-Share Matrix or the Business Assessment Array, are felt to play an important role in the identification of product elimination candidates. However, the orientation is clearly strategic, in that the current and future health of the entire range is assessed, and scenarios for future successes formed and compared, so that the effectiveness of the entire portfolio is maintained.

On the other hand, what information about product elimination that we have suggests that deletion is rarely a strategic concern. This may well be because most of the emphasis is tactical and operational, based on monthly management accounts and marketing product reviews based on management accounting.

In the next chapter, attention is turned to the literature dealing with this approach to product elimination.

CHAPTER 2

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CHAPTER 3

The Marketing Approach to Product Elimination

3. The Marketing Approach to Product Elimination

3.1. Introduction

"The whole subject of product elimination has been neglected by marketing managers and economists. The literature on product abandonment is very sparse and vaguely defined; no body of knowledge exists that can be referred to for guidance in this area. A comprehensive perspective cannot be obtained through a synthesis of the small amounts of isolated data and bits and pieces of information lodged in many places."

Berenson (1963) p.63

More than twenty years have passed since Conrade Berenson made this observation about the state of the product elimination art. During this time articles, data and information concerning product elimination have accumulated, but the total picture emerging from these is still rather confused: data remains isolated and scraps of information stay lodged in many places. While the subject matter of articles, studies and recommendations converges in some instances, it diverges in others, leaving some parts of the product elimination canvas fraught with detail and double image, and other parts hazy and bare.

Contributions to this body of knowledge have come from fewer than forty authors over a period of twenty years. Little wonder then, that no guiding framework exists to channel thought and investigation to those areas of the subject which most need it. In the absence of an overall conceptual framework, writers and researchers have dealt with different aspects of the subject area, on different continents at different times, from different points of departure. The resulting irony is a body of literature which is at once diverse and sparse, detailed and patchy.

3.2. Objective and Organisation of the Review

It is the intention of the review to dissect a very diversified literature into meaningful categories in order to recognise more

easily its duplications and repetitions as well as its shortfalls and gaps.

It is a decision process which constitutes the subject matter of the literature to be reviewed in this chapter: the product elimination decision-making process. This means that as well as documenting the itinerary of the decision, relevant literature must also cover the contingencies and influences to which that decision is subject. A primary appraisal of contributions reveals disparity among authors, not only regarding the perception of the decision-making process itself, but also regarding the number and nature of influences on the process. To begin with, authors whose contribution is nominative have markedly different perceptions from their colleagues who describe behaviour. Certain writers view product elimination as a multi-staged sequential process while others prefer to restrict themselves to one stage of such a process; while still others view the decision as a single-step, uncomplicated affair. To review the work to date by concentrating on the decision stages would be to follow the pattern of duplication. Avlonitis (1980), Salerno (1983) and Gauthier (1985) have already analysed the bulk of the literature focusing on the decision variables and their concomitant rules and procedures. Since most writers have concentrated on such considerations, this micro-analysis used by the above authors is the logical approach and consequently is repeated in the current review. However, many articles written on the subject are concerned with other aspects of the decision-making process, and suggest for example who might be involved, or what the appropriate locus of discussion might be, or what might be the nature of the influence of company objectives on the decision-making process.

The purpose of this chapter is to review this literature and to point out its duplications and gaps. It will be organised into three sections.

The first section an overview will deal with the broad approaches taken by various writers. It will therefore classify the literature along broad or "macro" lines.

The second section will describe the work of the major contributors to the subject as briefly as possible, and provide some comment.

The third and final section, a "micro" analysis of the literature deals with the marginal contribution of the key authors regarding the content of the elimination decision process.

3.3. The Evolving Theory of Product Elimination: An Overview 1952-85

A thorough appraisal of the major contributions to the subject of product elimination highlights 4 major approaches which explain a large part of the variance in perception:

- (i) The broad approach to the subject: descriptive or prescriptive?
- (ii) The scope of the decision process: one, two or multi-staged?
- (iii) The organisational aspects of the decision-process: who is involved and where is it located?
- (iv) The external influences on the decision process, or "antecedents".

Each approach will be explained, and the various perceptions of the product elimination process will be assessed.

3.3.1. The Broad Approach to the Subject: Descriptive or Prescriptive?

This dimension seeks to point out whether a particular author's contribution is "logic-deductive" or whether it is based on the findings of empirical study. As can be seen from Table 1, the majority of articles are prescriptive. In fact, nearly all of the writers before 1970 contributed to the subject with normative accounts of how best to conduct the product elimination process.

Alexander's article in 1964, and Kotler's one year later have stood the test of time, and much of their reasoning and conceptual frameworks has been used as a basis for study. For example, Rothe (1970) and Banville and Pletcher (1974) used Kotler's (1965) and Alexander's (1964) reasoning to help formulate their questionnaires.

The depth and quality of prescriptive contributions varies from the two-page discussion document of the type written by Clayton (1966) to the complicated mathematical model presented by Hamelman and Mazze (1972).

Some articles have been classified "prescriptive" in Table 1 although they have been based to some degree on experience "in the field". Berenson (1963) gathered material from "extensive field work with many firms and executives ", yet his primary aim was to develop a model of how product elimination might be carried out. The content of his work is really more prescriptive than descriptive.

While fully-fledged descriptive work is less abundant than its normative counterparts, it does seem to be increasing.

Journalistic discussions apart^{*}, the contributions to the literature since 1980 have been descriptive, with full accounts of research methodology and sample strategy (Avlonitis 1980; Salerno 1983; Hise et al 1983). However, among these descriptive works there is still a large amount of disparity, not only in terms of which aspects of the decision-making process are studied (which is examined later) but also in the industries examined.

* A number of "light" articles on various aspects of product elimination have appeared in Newspapers and Journals ("Marketing" 1984, 1982; Sunday Times 1984). This discussion is limited to articles broaching the problem more formally.

Rothe's work (1970) is limited to fast-moving consumer goods companies; Pletcher's is restricted to the house appliance market. Hise and McGinnis (1975) restricted their survey to America's 500 largest manufacturing companies, Evans (1977) research was limited to one company, while Avlonitis (1980) investigated product elimination behaviour in British Industrial manufacturers. Salerno (1983) conducted an investigation into both consumer and industrial goods manufacturers in France and used his findings to build an empirically-based model to guide part of the product elimination process.

It can be seen from the above that despite the existence of only two broad categories, the differences among authors are very great. However, this initial categorisation helps us to understand the course of development in product elimination theory.

3.3.2. The Scope of the Decision: One, Two or Multi-staged.

That a decision can be described as a series of sequential stages is not new (Cyert, Simon & Trow 1956; Mintzberg, Raisinghani & Theoret 1976). While precise details of these stages can and do vary from decision to decision, perhaps the most common format begins with the recognition that a decision ought to be taken. A search for possible courses of action ensues, itself followed by an evaluation of these courses of action and choice of the most appropriate one. The final stage of the decision is implementing that choice. While this framework was expounded originally by organisation theorists it has been used successfully to describe and explain behaviour in other fields dealing with decision-making processes, such as Organisational Buying Behaviour and New Product Development (Robinson, Faris & Wind 1967; Cooper 1975). The framework has also been applied, implicitly and explicitly, in the work dealing with product elimination decision-making. However, no consensus exists as to what the entire product elimination decision-making process embraces, nor do all authors deal with all stages, and even the terms used to describe the stages differ. To promote a clearer understanding of the relative positions of

writers on the subject; and to clarify the subject itself, the literature will be analysed in relation to the following description of the stages in the decision-making process.

The process begins with recognising that a product is a candidate for elimination. This stage will be referred to as the "recognition" stage.

The second stage comprises two elements. The first is the investigation of the precise cause of the product's "fallen" status. The second is the isolation and evaluation of alternative ways of revitalising the product. This will be referred to as the "analysis and revitalisation stage".

The third stage involves evaluating whether or not elimination is the correct course of action, given the wider implications of such a decision, and making the final decision to retain or drop the product. This will be referred to as the "evaluation and decision-making stage".

The final stage again comprises two elements. The first is actually implementing the decision to drop the product: the logistics of who? how? where? The second is the implementation of a strategy designed to deal with declining products - essentially a longer version of the first element. This stage will be referred to as the "implementation stage".

This particular decision format was chosen as it is the most comprehensive description of the product elimination decision, and is wide enough to embrace all the varied perceptions of the decision contained in the literature. By way of a concluding remark about the relevance of considering decision-stages, it should be pointed out that although they are described and analysed as separate entities, the whole decision is in practice a much less rigorous and more fluid process (Avlonitis 1980). The value of dissecting it lies in the possibilities for comparing the

"decision-variables" or "factors" considered during the process. A "factor" which is important in recognising that a product is an elimination candidate may not be so important when actually deciding or implementing a decision. Under such conditions it seems imprudent to lump all criteria together, with no mention of the stage to which they are pertinent, or of the function they help fulfil.

Table 3.1 summarises the contribution of authors in light of the definition given above. Broadly speaking, the literature can be divided into two: that which deals with only one stage of the decision, and that which focuses on the entire product elimination process. Houfek (1952), Worthing (1976), Kratchman, Hise & Ulrich (1973) limit themselves to the "recognition" stage. Also relevant to this stage in the decision are the approaches which advocate "portfolio classification". These approaches by Drucker (1963), Boston Consulting Group (1963), Fluitman (1973), Wind and Clayclump (1976) are primarily concerned with managing the whole product range for maximum growth. As one of the steps in the procedure is to classify the performance of products along certain criteria, they can be seen to apply to the "recognition" stage of the product elimination decision.

Evans (1977) explores the "analysis" stage in some detail while Berenson (1963) and Clayton (1966) expound methods of evaluating the situation and coming to a final decision. Talley (1964), Weller (1969) and Michaels (1971) confine their articles to the question of implementing the decision to eliminate a product.

The remaining authors either describe the whole process as they found it to be in their respondent companies (Avlonitis 1983; 1984; 1985; Salerno 1983) or prescribe models and means of carrying out the product deletion decision. (Alexander 1964; Kotler 1965; Eckles 1971; Hamelman and Mazze 1972; McSurelt and Wilemon 1973; Browne and Kemp 1976). Although most of these authors deal with the decision as a series of sequential stages and describe each stage

separately, there are others who do not acknowledge this distinction. (Sonneck and Hurst 1960; Banville and Fletcher 1974; Hise, Parasuraman and Viswanathan 1984).

3.3.3 The Organisational Setting of the Product Elimination Decision

The organisational setting describes two related facets of product elimination decision-making: those who participate in the decision-making process and the "mechanisms" or "meetings" or "settings" in which they identify, analyse and evaluate elimination candidates.

In the previous chapter, four views of the product planning function were described. Chapter two dealt with product planning at the strategic level and with product planning as the NPD process.

The remaining views were a) product planning as the need to plan where, when and how to add new products and delete or modify existing ones, and b) product planning as part of the continuous administration of the product ranges including production, distribution, financial control. The first of these may be described as operational product planning and would take place as part of a company's yearly planning cycle. The second type of planning, more concerned with control of the day-to-day matters may be described simply as control (Bureau 1981).

These twin processes may be undertaken by any number of people, depending on the organisational structures and responsibilities.

This subsection considers what the "elimination literature" has to say about the elimination decision process with regard to its organisational setting, described by these two factors.

Table 3.1 The Marketing Approach to Product Elimination: An Overview

CONTRIBUTOR AND APPROACH	SCOPE	LOCUS	ENVIRONMENTAL SETTING
Houfek (1952) Prescriptive	Article deals with recognition stage; suggests products not meeting specified criteria are dropped immediately	Advocates a 'product review committee' without specifying functional areas which might be included. 'Review' should take place periodically	None considered
Sonnecken & Hurst (1960) Prescriptive	Article advocates a marketing audit which contains criteria covering recognition, revitalisation and implementation stages; decision not dealt with in stages directly	Not specifically addressed	None considered
Berenson (1963) Prescriptive	Article deals with 'evaluation and decision-making stage' only	Not specifically addressed	Article does not integrate any other factor into the process, but does highlight that <u>strategic choice</u> factors would influence the decision
Drucker (1963) Prescriptive	First of several portfolio classifications which serve to evaluate product performance and can be useful for recognition of elimination candidates	Not specifically addressed	None considered
Alexander (1964) Prescriptive	Author considers 3 stages: recognition, evaluation and decision-making, implementation	Recommends responsibilities by specifically assigned among marketing, finance, production personnel	None directly considered but 3 levels of influence are noted: structure and operating methods of the firm's position in the industry and market; management objectives

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Table 3.1 The Marketing Approach to Product Elimination: An Overview (Continued)

CONTRIBUTOR AND APPROACH	SCOPE	LOCUS	ENVIRONMENTAL SETTING
Kotler (1965) Prescriptive	Article deals with recognition, analysis, evaluation and decision-making stages	Advocates appointment of a team to take responsibility for the problem. Team to consist of high-level executives representing marketing, manufacturing, purchasing, finance, personnel, R&D. Process initiated by annual appraisal of products	None considered
Clayton (1966) Prescriptive	Article deals exclusively with evaluation and decision-making stage	Not specifically addressed	None considered
Weller(1969), Talley (1964) Both Prescriptive	Both authors deal with the final, implementation stage of the decision	Not specifically considered	Weller concludes that traditional strategic objectives may impede execution of the implementation strategy he recommends
Rothe (1971) Descriptive (sample drawn from consumer goods manufacturers only)	Author investigates the 2 decision stages proposed by Kotler: recognition and analysis; he also investigates the alternative implementation strategies	Identifies chief participants as marketing and corporate management. Advocates monthly or six-monthly reviews of products	None considered
Michael (1971) Prescriptive	Explores possibilities for the decline stage of a products life cycle. Can be viewed as a protracted withdrawal strategy	Suggests an equivalent form of venture management be given responsibility to manage the declining product	None considered

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Table 3.1 The Marketing Approach to Product Elimination: An Overview (Continued)

CONTRIBUTOR AND APPROACH	SCOPE	LOCUS	ENVIRONMENTAL SETTING
Baccour (1971) Descriptive (3-staged model tested in 11 companies)	3-staged model was tested embracing recognition, analysis, evaluation and decision-making, implementation	Product managers are identified as instrumental. Findings suggest that existing product performance reviews highlights poor performance. No description of such reviews is given	None considered
Eckles (1971) Prescriptive	Article covers recognition, evaluation and decision-making, implementation, although this is not broken into a 4-staged model	No specific mention of participants, but recommendation that 'product review' take place monthly	None considered
Worthing (1975) Prescriptive model (tested in 1 U.S. company)	Model covers recognition, which is very elaborate and also serves as an aid to decision-making	Not specifically addressed	None considered
Hamelman & Mazze (1972) Prescriptive	Computer-aided model (PRESS) relates to recognition, analysis, evaluation and decision-making stages of the decision	Loosely suggested is that general and marketing management should have responsibility for executing the model	None considered
Winkler (1972)	Procedure based on Houfek and Alexander. Concentrates on implementation, which he calls profit-stripping	Advocates formal review by committee comprising key executives	None considered
Fluitman (1973) Prescriptive	A portfolio classification, thus contributing to the 'recognition' stage of the decision	Not specifically considered	None considered
McSurley and Wileman (1973) Prespective	Three stages are considered: identification, revitalisation evaluation and decision-making	Suggest "future planning group" to identify products, but the <u>PEIR</u> group in primarily responsible	None considered

Table 3.1 The Marketing Approach to Product Elimination: An Overview (Continued)

CONTRIBUTOR AND APPROACH	SCOPE	LOCUS	ENVIRONMENTAL SETTING
Barville & Pletcher(1974) Descriptive (sample drawn from manufacturers of small home appliances)	Investigation and description of the process is not carried out in terms of a multi-staged sequential process: the decision variables pertinent to the whole process are identified, and their relative importance described	Authors found that the composition of the DMU changes with the expected impact of the elimination: the greater the impact the higher the level	Authors describe reasons other than poor product performance for eliminating products:- declining demand on an industry-wide basis, coercion by external forces, incompatibility with distributive channels. These are not investigated
Hise & McGinnis (1975) Descriptive (Sample drawn from the 500 largest manufacturing firms in the U.S.)	Study investigates recognition, analysis and revitalisation, evaluation and decision-making stages. Also studied are the formality of the processes used, and the consideration of ethical issues	Responsibility assigned in ² /3 of the companies; in 2 of those companies the product manager was primarily responsible. Authors also report a yearly review of specific non performers	None considered
Kratchman, Hise, Ulrich (1975) Prescriptive	Article outlines benefits of integrating accounting data into the 'recognition stage' of the decision-making process	Marketing and accounts personnel are mainly responsible in this article	None considered
Wind & Clayclomp (1976) Prescriptive	Recognition - through product portfolio analysis	Not specifically considered	None considered

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Table 3.1 The Marketing Approach to Product Elimination: An Overview (Continued)

CONTRIBUTOR AND APPROACH	SCOPE	LOCUS	ENVIRONMENTAL SETTING
Browne & Kemp (1976) Prescriptive	Model corresponds to recognition analysis and revitalisation; evaluation and decision-making stages	Article emphasises that the level of management should increase as the process moves from fairly routine recognition to the more delicate decision-making	The influence of corporate objectives is recognised
Evans (1977) Descriptive (in-depth history)	Investigates "why" a product has failed, the analysis and revitalisation stage	Not considered	Not considered
Hise (1978) Prescriptive	Explains how recognition, analysis and revitalisation, evaluation and decision-making stages	Not considered	Not considered
Bell (1979) Prescriptive	Explains the recognition, analysis and revitalisation, evaluation and decision-making, implementation stages may be executed. Also covers ethical and legal aspects of elimination	Not specifically considered. Advocates to monthly review of the product line and suggests this be done by marketing managers. Bases his suggestions on synthesis of other work in the area	Not considered
Avlonitis (1980, 82, 83, 84, 85) Descriptive (sample drawn from industrial manufacturers. In-depth interviews and mail survey)	Describes recognition, analysis and revitalisation, evaluation and decision-making, implementation as it exists in industry. Also studied are formality of decision and ethical factors	Identifies those whose role is advisory as: marketing finance, production, engineering, purchasing. Identifies decision-makers as MDs and Chief Executives	Investigates the effect of the techno-economic and formality of the decision on the process used

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Table 3.1 The Marketing Approach to Product Elimination: An Overview (Continued)

CONTRIBUTOR AND APPROACH	SCOPE	LOCUS	ENVIRONMENTAL SETTING
Salerno (1983) Descriptive (Sample drawn from both consumers and industrial goods companies, mail survey)	Investigation and description of the process is not carried out in terms of a multi-staged sequential process. The relative importance of decision-variables pertinent to the whole process is investigated	Describes the involvement of functions at <u>each stage</u> of the decision. Marketing, top management, sales, finance and production dominate. Most companies hold regular product reviews to recognise elimination candidates, but precise nature of these reviews is not described	Investigates the effect of formality on the decision process. Examines the effect of length of product line and price-level of the products
Hise, Parasuraman and Viswanathan (1984) Descriptive (sample drawn from 1,000 largest U.S. firms. Mail survey)	Investigates the extent and effect of computerisation of the elimination decision, unrelated to decision-stages	Examine assignment of responsibilities: product managers, sales managers, marketing managers, and VP marketing. Most companies indicate yearly reviews	None investigated
R Kent (1984) Descriptive (sample drawn from manufacturers in food industry. In-depth interview)	Does not specifically investigate the product-elimination process, but range policy in general. Covers areas of interest: relative importance of elimination as an activity, performance measures used, systematic behaviour	Not considered	Not considered
J P Gauthier (1985) Descriptive (French manufacturing industry)	Investigates 4 stages: recognition, analysis and revitalisation; evaluation and decision-making; implementation	Not considered	Deals with the impact of the initial problem situation that triggered the decision

A number of authors appear to place the product elimination decision within the context of the company's yearly planning cycle - the first level, as described above. Houfek (1952) and Kotler (1961), for example, recommend that a yearly review of product performance take place, during which candidates for elimination may be uncovered. Such practices are carried out in some companies as evidenced by the studies of Hise and McGinnis (1975) and Hise, Parasuraman and Viswanathan (1984).

Other authors suggest that the product elimination decision is positioned within the managerial structures of control - the second level, as described above. Eckles (1971) prescribes, for example, a monthly product review at which elimination candidates can be deleted and tracked. McSurely and Wilemon (1973) are less specific, advocating a "periodic review". Both Rothe (1971) and Salerno (1983) found the location of the product elimination process to be rooted in "periodic business reviews".

A majority of writers do not attempt to locate the process at all, confining their decisions to one stage of the decision, and omitting to consider how this stage "fits" with the multitude of other product decisions that have to be taken (Berenson 1963; Weller 1969; Talley 1964; Clayton 1966; Michaels 1971).

On the other hand, Alexander (1964) and Hise and McGinnis (1975) cover the entire product elimination process without mentioning its setting.

A few authors go some way towards situating the process in a managerial context by suggesting that the first stage - the recognition stage, be facilitated by routine collection of performance data. They do not, however, suggest when or where the data might be reviewed (Sonneck and Hurst 1960; Browne and Kemp 1976; Evans 1977).

A few empirical writers help to shed light on the setting of the elimination decision by reporting the relative importance accorded to it by managers.

Results quoted by Rothe (1970), Avlonitis (1980) and Salerno (1983) concur: most respondents thought product elimination less important than other product decisions such as NPD or product modification.

In describing the various decision-making units (DMUs) Avlonitis (1984) shed some light on the organisational setting of the product elimination decision. Five modes of decision-making group were discovered, and are presented in Table 3.2.

Table 3.2 Decision-Making Unit for Product Elimination

COMMITTEE/GROUP	NO. OF COMPANIES CITING
Managing Director/Management Group	7
Board of Directors	4
General Manager/Parent Group	2
Ad Hoc Elimination Committee	1
Product Planning Committee	6

Source: Avlonitis (1984), "Advisors and Decision-Makers in Product Eliminations", Industrial Marketing Management, 13.

He also specified the functional areas involved in the decision, and these are presented in Table 3.3a, although clearly, the "Committee" was the preferred focus of the decision.

In addition, Avlonitis examined involvement of functional departments at each stage of the decision and evidenced that members of marketing and finance departments were involved in the detection of weak products and in the collection and analysis of information (see Table 3.3b).

Table 3.3a Those Involved in Elimination Decision-Making

FUNCTIONAL AREA	NO. OF COMPANIES RANKING 1ST
Marketing	17
Finance	4
Engineering	2
Production	-
Purchasing	-
Committee	71

Source: Avlonitis (1984), "Advisors and Decision-Makers in Product Eliminations", Industrial Marketing Management, 13.

Table 3.3b Those Involved in Identification and Analysis of Elimination Candidates

Functional Area	No. of Companies Ranking 1st in Detection of Weak Products	No. of Companies Ranking 1st in Analysis of Weak Products
Marketing	71	69
Finance	10	12
Engineering	5	7
Production	7	5
Purchasing	-	1
Committee	1	-

Source: Avlonitis (1984), "Advisors and Decision-Makers in Product Eliminations", Industrial Marketing Management, 13.

Several authors advise the formation of a committee to deal with the product elimination process (Houfek 1952; Michael 1971). However, the members of the committee are not detailed by these two authors. Kotler (1965) suggests the inclusion of marketing, manufacturing, purchasing, finance, personnel and R + D departments, McSurely & Wilemon's (1973) proposed a PEIR (product evaluation, improvement review) team consists of marketing, manufacturing, finance and engineering people.

Another group of writers, while detailing the functions that might be involved in the product elimination process, do not specify that a special committee should be formed.

Alexander (1964) recommends representation from marketing, finance, production and personnel in the production elimination decision. Baccour (1971) Hise & McGinnis (1975) found that primary responsibility for the decision resides with the product manager, Rothe (1971) and Hamelman and Mazze (1972) cite marketing and general management as being instrumental in the decision process.

Salerno (1983) conducted a detailed examination of the DMU. He identified the primary participants at three stages in the decision, as summarised in Table 3.3c. Sales, marketing, general management and production are the principal protagonists. In general, Salerno's findings concur with those of Avlonitis, in that "production" takes charge of the implementation. However, the stage in the decision is not the only influence upon the composition of the decision-making unit. Other influences will be examined in the next section.

It is interesting to note that Salerno is the only researcher to have investigated several functions' attitudes to the product elimination process. His findings assimilate the views of the major functions in the organisation: marketing, finance, production, unlike other studies which consulted management only.

Table 3.3c The Functional Areas Participating In the Decision (rank ordered)

Recognition	Evaluation and Decision-Making	Implementation
Marketing	Marketing	Production
Sales	General Management	Sales
Finance	Sales	Marketing
General Management	Production	Purchasing
R + D	Finance	Finance
Production	R + D	General Management
Engineering	Purchasing	Engineering
Purchasing	Engineering	R + D

Source: Salerno (1983), "L'Elimination des Produits Non-Performants", Revue Francaise de Gestion, Novembre-Decembre

Browne and Kemp (1976) suggest that the seniority of managers involved in the decision should increase as the decision process proceeds from recognition to evaluation and decision-making. This view is shared by Kotler (1965) and witnessed by Banville and Pletcher (1974) Rothe (1971), Avlonitis (1984) and Salerno (1983).

3.3.4 Influences on the Decision-Making Process (Antecedents)

A corollary of the investigation of decision-making processes is the examination of factors influencing those processes. In the field of Organisational Buying Behaviour throughout the 60s and 70s, the focus on factors explaining and predicting organisational buying behaviour dominated most of the US studies (Wind and Thomas, 1980). The new product development process has also been studied in the context of those factors which exert an influence on it (Cooper and Calantone, 1979). From Table 3.1, however, it can be seen that relatively few authors dealing with the product elimination process have considered factors which might influence

it. Such factors may be referred to as "antecedents" (Ozanne and Churchill, 1971). A brief scan of literature where decision processes and their respective influences have been examined reveals that the term "antecedents" covers a variety of factors - the external environment, the corporate environment, the technological environment, the managerial climate, strategic choice, to name but a few. Full description of these factors is extraneous to the present discussion, largely due to the fact that few of them have been considered with reference to product elimination. Where authors have incorporated antecedents into their discussions, the particular antecedents in question will be described.

As mentioned in Chapter 2, a few early normative articles postulated on the effect of strategic objectives on elimination behaviour (Berenson 1963; Alexander 1964). Some early work also considered some other antecedents. Alexander (1964) considered the effect of organisational structure and operating methods. Banville and Pletcher (1974) identify four situations under which a product may be evaluated for possible elimination, and note that the factors considered during the decision-process may vary with each specific situation. This concept is akin to the "buying situation" expounded originally by Robinson, Faris & Wind (1967) and suggests that different decision processes are followed under different circumstances.

However, it is largely due to the work of the 80s that we have some indication of factors which influence the product elimination process.

Avlonitis (1980, 1982, 1983, 1984, 1985) examined the effect of contextual variables describing the sample companies' environment and its impact on the content on the product elimination decision process. These contextual variables were size, product diversity, operations technology, technological change and market competition.

Organisational size (number of employees and sales turnover) was seen to have an influence on the recognition and analysis and revitalisation stages, enhancing the importance of certain decision-variables in those stages.

Product diversity (number of products in the total product mix) appeared to augment the importance of variables in recognition, analysis or revitalisation, and evaluation and decision-making stages.

Operations technology (the batch sizes of production) affected only the evaluation and decision-making stage to any discernible extent.

Rate of technological change had a negative impact on the analysis and revitalisation stage; it seems that where the rate of technological change is rapid, there is less inclination to revitalise elimination candidates.

Market competition seemed to account for a great many significant correlations, in recognition, analysis and revitalisation, evaluation and decision-making stages. This was undoubtedly the most influential antecedent. Generally, the implementation stage was less susceptible to these contextual factors, a fact Avlonitis explains by suggesting that the way in which a product is dropped is a function of its own unique circumstances. Indeed, along with the contextual variables he set out to investigate, he discovered several factors specific to the unique circumstances of the product which influence, not only the decision-making process, but also the decision-making unit, or the DMU. These product-specific antecedents are basically the "problem situations" which first triggered the product elimination process, (he identifies eight situations) and the product's importance - or amount of company resources and sales turnover that it accounts for. Generally, the greater the implications of the decision (which will be greater if the product accounts for substantial amounts of sales turnover and company resources), the more people are involved in the DMU and the greater the seniority of its members.

A third "set" of variables is also investigated in terms of its impact upon the decision-making process, these variables measure the formality of the decision. Avlonitis (1985) found that formality influences the choice and relative importance of the decision criteria used during the process, and he argues that it has a positive effect on "elimination effectiveness", if such effectiveness is measured by his criteria of, a) the number of products dropped in the last five years and b) the length of time the decision takes. Overall, there is minimal formality in product elimination procedures.

The second major contributor of the 80s is Francis Salerno, who also investigates the effect of certain antecedent variables on the elimination decision variables. His antecedent variables include industry (consumer or industrial companies), product diversity, price level of the product concerned.

Salerno found that all of these independent variables affect the relative importance accorded to the decision variables. He also illustrates that, in the industrial market production people assume greater responsibility for product elimination, while low product diversity increased the level of general management's involvement in the decision. "Price level" was also found to affect the DMU. Salerno's "price level" was indicative of the product's "importance".

Salerno also investigated the effect of formality on the decision. He found that the "final" implementation stage was most likely to entail a higher degree of formality. He also found that formality did not increase the effectiveness of the decision, although his measures of effectiveness were quite different from those of Avlonitis. Salerno tested the extent to which formality affected a) the divergence of opinion within the organisation; b) the importance and frequency of a disagreement; c) the perception of roles and responsibility in the elimination decision. Formality was not found to affect any of these measures.

Hise, Parasuraman & Viswanathan (1984) studied the extent to which product elimination programmes have been established, and/or effectively implemented. They attempted to distinguish companies in light of these two antecedent variables, and other related antecedent variables and to test the affect of the latter on a) operational aspects of product elimination programmes; b) company marketing department and product elimination factors and c) perceived benefits of product elimination programmes. These categories are explained in Table 3.4. It can be seen from this table that the effect of "external variables" on product elimination decision-making is not investigated per se, but rather the authors seek to determine those factors in Table 3.4 which distinguish between:

- a) Companies who do and companies who do not have "product elimination programs;
- b) Companies whose product elimination programs used computers and companies whose product elimination programs did not use computers;
- c) Companies whose product elimination programs were in writing and those whose were not in writing;
- d) Companies whose product elimination programs were in writing and those who did not have product elimination programs;
- e) Companies whose product elimination programs made use of the computer from those who did not have product elimination programs.

Apart from not explaining what exactly "product elimination" programs comprise, the precise implications are neither clear nor cogent, while effectiveness is again assumed to be measurable by the number of products eliminated. The fact that differences were found between the pairs of categories listed above tells us very little about the company, their operating environment or the exigencies of the market, so concluding from this somewhat haphazard investigation of antecedent variables is a difficult task. Gauthier (1985) also took up the challenge of precipitating

circumstances and found that the specific stimulus which sets the product elimination process in motion, largely influences the intensity and nature of this process.

From the foregoing overview, it can be seen that a great deal of diverse information and opinion is to be found in the work of fewer than forty people. At this stage of the review of the literature, some major observations can be made

- . Most authors, both descriptive and prescriptive, have tended to focus on the decision process itself, describing or recommending its stages.
- . Where influencing factors have been considered, they have been shown to affect the process, those involved in the process and its focus.
- . The influencing factors can be broken into two main groups:
 - a) External factors, like industry, organisational size, technological and competitive environment, management objectives, operating methods, product diversity and value.
 - b) Product-specific factors, like the "problem situation", "importance" of the product, have an impact on the decision.
- . Minimal knowledge and greatest confusion exists regarding the "locus" of the product elimination process, and the relation of the process to other managerial functions.

Table 3.4 Information Obtained by the Study on Product Elimination

Operational Aspects of Product-Elimination Programs	
1	Length of time the product-elimination program has been in existence.
2	The number of products that have been reviewed.
3	The total number of products that have been eliminated.
4	Whether the product-elimination program exists in written form.
5	Whether computers are used in the product-elimination program.
6	Type of information provided by computer when products are considered for elimination.
7	Frequency at which products are considered for elimination.
8	Whether specific responsibility is assigned for the product-elimination program.
9	Who is responsible for the firm's product-elimination program.
10	What are the reporting relationships for the individuals responsible for the firm's product-elimination program.
Company, Marketing Department, and Product-Elimination Factors	
1	Objectives considered most important by the firm.
2	Types of major product lines (consumer vs. industrial)
3	Number of different products produced and marketed.
4	Percentage of products' sales estimated to result from the sales of other products (complementarity phenomenon).
5	Kinds of information for products made available on an annual basis.
7	Major type of functional experience for the company's chief executive officer.
8	Whether the chief marketing executive reports directly to the firm's chief executive officer.
9	The basic organisational structure of the marketing department.
10	Whether the marketing department undergoes an annual marketing audit.
11	Whether the marketing department has a marketing information system (MIS).
12	Whether the marketing department has a marketing research department.
13	Number of individuals employed in the marketing research department.
14	Size of the marketing research department's annual budget.
15	The number of products that have been reviewed.
16	The number of products that have been eliminated.
17	The number of products that have been eliminated during the preceding year.
Perceived Benefits of Product-Elimination Programs	
1	Perceptions as to how product-elimination programs should benefit a company.
2	Specific benefits resulting from the firm's installation of product-elimination programs.
3	Benefits believed to have accrued to other companies which have installed product-elimination programs.

Source: Hise, Parasuraman and Viswanathan (1984), "Product Elimination: The Neglected Management Responsibility", Journal of Business Strategy, Spring.

3.4. Presentation and Discussion of Major Contributions

The preceding section has outlined the major differences in approaches taken by writers in the field and has pointed out the influences on the elimination decision they have considered. The differences observed account for a large amount of the variation in the literature.

The current section seeks to present in more detail, each of the key contributors, explaining the concepts and discussing each piece of work on its proper merits.

3.4.1 Houfek (1952)

Houfek's article, probably the first specifically addressing the question of product elimination, proposes a four-staged solution to identify elimination candidates:

- 1) Tabulation of monthly sales for the most recent 12-month period.
- 2) Calculation of the total product cost, incorporating direct costs (material, labour) and variable factory overheads. Where marketing effort is very heavy, marketing costs should be allocated to the product.
- 3) Determination of contribution margin by subtraction.
- 4) Listing of all products according to their contribution margin, and selection of candidates for elimination.

The "review committee" examines each product against this financial criterion and is responsible for altering strategy. While this model of detection is rather straightforward, and takes no account of marketing considerations, it makes no attempt to guide the whole decision, but rather focusses on the "recognition" stage.

3.4.2 Sonnecken & Hurst (1960)

Ten questions are suggested for inclusion in a formal regular review of the product line, called a "Marketing Audit". The questions do in fact pertain to most "stages" in the

decision-making process described in page 6 of this review, although they are not asked in the strict order of the decision process. Various "secondary" issues raised by the questions are also listed below.

1) How Profitable is the Product?

The authors suggest profitability be measured against expected goals, company average. Where a product is low is a signal for further analysis, although the effect of removing the product on the defrayal of overheads, and the potential cost savings (related to plant and manpower) have to be appraised before a decision is taken.

2) What is the Scope of the Product Line?

This question triggers discussion of reasons for keeping unprofitable lines (e.g. to "round out" the line, to satisfy distributors or customers, to keep out competition, to live up to the company's leadership image or reputation of having a full range.) Buying rather than making is one alternative to supporting a very unprofitable line. This is also known as "sourcing" or "factoring". The authors point out that supporting a weak product for as vaguely defined a reason as "rounding out" is insufficient and that management should know and question precisely why support is maintained.

3) How good is your Marketing Efficiency?

4) How good is your Product Efficiency?

These questions are taken together as they are two elements of the same basic issue, namely the opportunity cost of continuing with a weak product.

5) Can the Product Costs be Reduced?

Essentially this is a question aimed at revitalising the product, the authors discuss "value analysis" and its ability to cut product costs without perceptible quality reduction.

6) Is the Product Priced Correctly?

The authors suggest this question be asked with specific reference to the product life cycle. Price may have to be altered in light of performance, thus improvising its profitability.

7) How is Your Product's Value Perceived?

8) Is Product Quality Correctly Pitched?

The purpose here is to isolate possible corrective measures such as adding new features, finding new applications, or reducing quality, to align the product's value with consumer expectation. Question 8 more specifically investigates the products suitability to the company's perception of quality and value.

9) Are Service Issues Fully Appreciated?

Issues like the necessity for replacement parts are underlined here as considerations for assessing a product's suitability for elimination.

10) What is the Competition Doing?

Management is forced to look at the possibility of competitors making inroads into its market share.

There is an obvious interrelationship in time and function among certain questions. This can be usefully reorganised by relating the 10 questions to stages in the decision.

DECISION STAGE	QUESTION NUMBER
Recognition	1; 10
Analysis and Revitalisation	5; 6; 7; 8
Evaluation and Decision-making	2; 3; 4; 9

Although the authors do not suggest how the various issues they raise might be combined, compared or contrasted, they do have an enormous scope and serve as a useful thought-provoking list of "checks".

3.4.3 C Berenson (1963)

In dealing with the "evaluation and decision-making stage", Berenson's primary objective is to develop a conceptual framework for organising the numerous factors for decision-variables vital to the drop/retain decision. He identifies five categories of variables:

- 1) Financial security, includes criteria relevant to current financial performance, for example, basic profit criteria, such as minimum return on investment.
- 2) Financial opportunity embraces criteria which examine the opportunity costs the product accounts for, the amount of return in excess of minimum standards it generates, its stage in the PLC trajectory. Such criteria attempt to investigate and juxtapose the cost of keeping the product - in terms of lost opportunity, and the cost of dropping it.
- 3) Marketing strategy covers a variety of marketing considerations important to the drop/retain decision. Alongside the factors related to the image of the company, like "rounding out the line" or "company image", Berenson's includes the practical problems of eliminating products: the type and number of customers who buy the product; the buying habits of the users; the service policies of the company; the distribution used by the company, all of which may be profoundly affected by a decision to discontinue. Another "group" of considerations is related to the competitive position of the company: patents and trade markets, market leadership, market share, marketing agreements.
- 4) Social responsibility introduces into the decision those issues which relate to employees, customers and communities who are affected by the operations of the company.

Figure 3.1 Schematic Overview of Berenson's Model

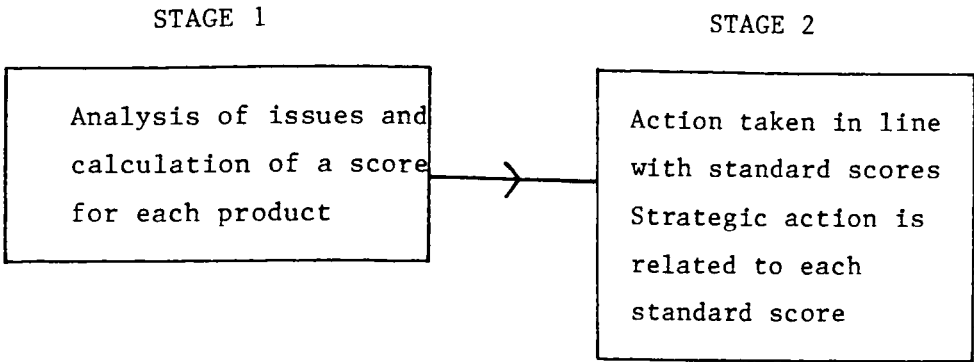
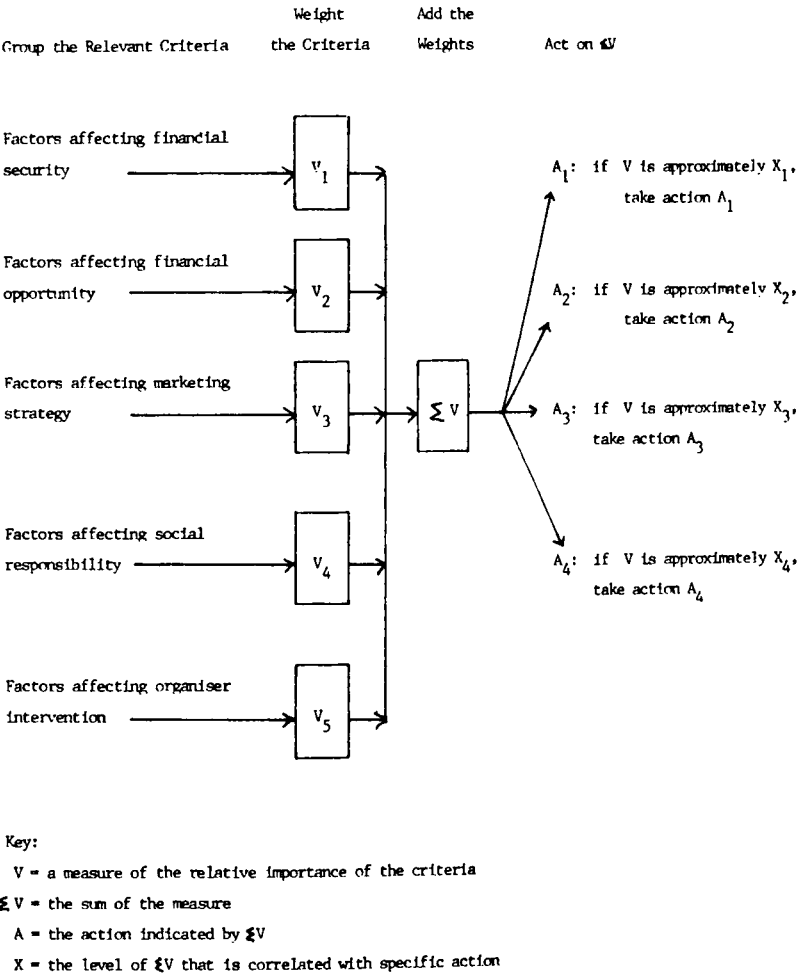


Figure 3.2 Berenson's Model Proper



Source: Berenson, C (1963) "Pruning the Product Line", Business Horizons, Summer.

- 5) Organised intervention may arise from two sources: government and trades unions. Their actions have to be considered.

Having set the scene for the decision, Berenson's model has 4 stages (see Figures 3.1 and 3.2). The first involves grouping the relevant criteria into one of the 5 categories. Obviously criteria may come from different functional departments: accountants, sales, etc. They should be slotted into one of the 5 categories. The second stage involves assigning weights to all the criteria. Criteria relevant to category 1, Financial Security, may be measured, suggests Berenson, by a simple scale where products with more desirable prospects are allocated more points than those with less desirable prospects. Factors pertinent to Financial Opportunity are weighted in relation to predetermined point schedules or goals set by management. Marketing strategy variables, social responsibility variables and organised intervention variables are all measured on a point allocation system, where more points are allocated where there is likely to be few adverse marketing effects, low degree of social responsibility and low risk of organised intervention. The third stage involves adding the weights in each category to obtain "marks" for each factor: V1 - V5. The five V scores are added to obtain an overall index. The fourth and final stage is matching the index to the predetermined action; modifying marketing support, withdrawing marketing support, withdrawing completely. Berenson does not discuss how these actions may be related to index score points, nor does he discuss how to set cut-off points.

While his contribution is interesting in that it details a vast amount of factors which need to be evaluated when dropping a product, it has several shortcomings.

First, it assumes the existence of the abundant information needed for evaluating criteria in the first two categories, financial security and opportunity.

Second, the foundations upon which these two categories are built are not described or developed.

Third, he assumes that each "critical area" is critically equal for the purposes of computation. Yet one spokesman from a large chemical firm that he quotes does not feel that the fifth "critical area" is very critical at all: "We recognise it but it is a minor part of the total picture"

Fourth, no guidelines are set for matching the final score with the recommended action.

Fifth, although it is a major objective of the work to "substitute objectivity for subjectivity and emotion" one cannot say that he has been entirely successful due to the lack of guidelines on a) what criteria should be included in each "critical area"; b) how the criteria themselves might be weighted when deciding on a V score. In short, while he acknowledges differences in opinion among various organisation functions, he does not discuss how these might best be integrated.

Despite these observations, Berenson does dispel the myth that partial analysis of some, usually financial, factors is adequate for taking strategically significant decisions.

3.4.4 Drucker (1963)

Drucker's classification of products is similar to the portfolio matrices discussed in Chapter 2.

Drucker uses dimensions such as profitability, market penetration and sales growth rate to create six product classifications.

- 1) Tomorrow's Breadwinners. Such products may be either new or modified products which are profitable and widely accepted. They have further growth potential. This category of product should be represented in the company's total mix.
- 2) Today's Breadwinners. Such products are characterised by large volumes and healthy profits. They have potential for further growth subsequent to modifications to either the physical or the augmented product.
- 3) Products which show potential to become healthy profit earners provided some drastic action is taken.
- 4) Yesterday's Breadwinners. These products may still sell in volume overall, but are characterised by uneconomic batch sizes, a multitude of variations, specials, heavy promotion and support.
- 5) The "Also-Rans". These products were neither successes nor complete failures. They generated enough sales to warrant further investment. They generate enough managerial support, usually for what would seem to be emotional reasons.
- 6) The Failures. Such products do not usually give problems as they tend to fade themselves out anyway.

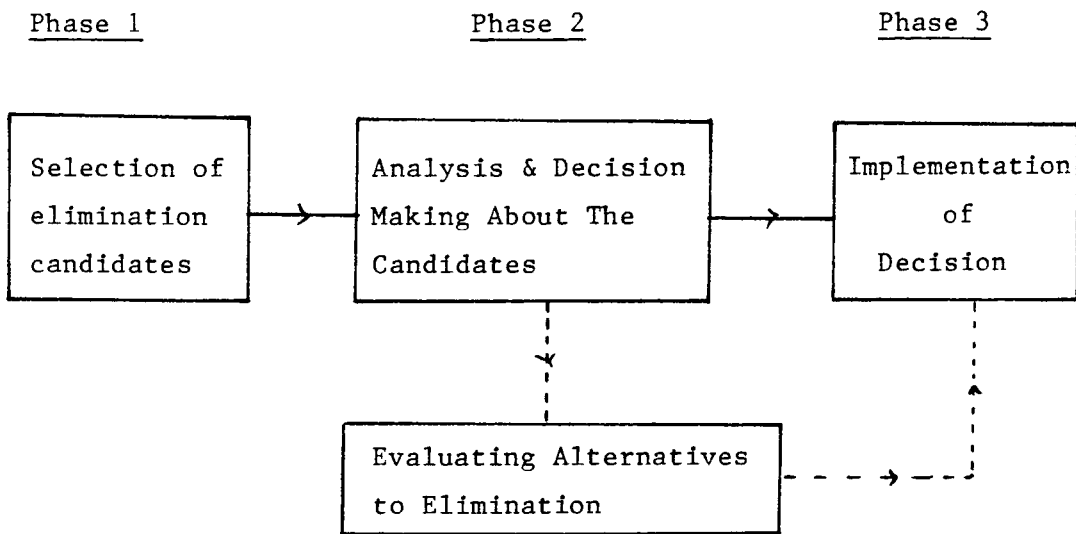
Having specified categories of products, Drucker outlines where support should be directed and where it should be withdrawn. Categories 1 and 2 should receive the resources they require to realise their potential. Only those products in category 3 which show a high probability of being successful should be supported. The rest of category 3, along with categories 4, 5 and 6 should either be produced without incurring any additional investment (beyond raw materials) or be allowed to die.

While Drucker's checklist is far from complete, and does not incorporate any "qualitative" factors, it can be a useful aid in product elimination decision-making, as it forces management to view "product performance" from the perspective of "the total range" and because it forces managers to think in terms of "strategy" for its products.

3.4.5 Alexander (1964)

Alexander advises that specific procedures be laid down to guide the entire product elimination decision-making process. While he makes no attempt to prescribe procedures, attention is drawn to two factors which should be borne in mind at each stage, i.e. identification of candidates for elimination, evaluation and decision-making and implementation stages. A description of Alexander's three-staged process is given below: (See Figure 3.3).

Figure 3.3 Schematic Overview of Alexander's Model



Source: Alexander, R S (1964), "The Death and Burial of Sick Products", Journal of Marketing, 28, April.

1) Selection of Elimination Candidates

Alexander recommends that a periodic screening procedure should be established to scrutinise products against the following criteria: sales trends, price trend, profit trend, introduction of a new product, product effectiveness, amount of executive time soaked up by the product. A downward trend in any of all of the first 3 is cause for concern, while a new product introduced by a competitor or by the company itself must raise the issue of elimination. A keen observation is made about the disproportionate amount of executive time that "problem" products absorb. However, these criteria are not sufficient for making a definitive decision, and the second stage should be carried out.

2) Analysis and Decision-Making about Sick Products

The author outlines the "critical" factors by regrouping them into 5 categories: profits, financial considerations, employee relations, marketing, other possibilities.

a) Profits. Under this heading 4 points of importance are raised:

- (i) A minimum acceptable profit standard should be set in line with overall profitability objectives of the company.
- (ii) The argument which states that products should be kept in the range "to help defray overheads" must be questioned vigorously.
- (iii) The potential savings on costs associated with the weak products should be quantified, and cost allocations should, nevertheless be scrutinised.
- (iv) A projected operating statement for after the deletion can identify the financial health of the company after the proposed deletion.

b) Financial considerations. Alexander draws attention to the impact created by elimination on fixed and working capital, with specific reference to:

- (i) Whether the equipment is versatile and transferable to other efforts.
- (ii) Whether the equipment is fully written down and sellable.

c) Employee relations. Alexander advises full appraisal of the implications of withdrawal for present and future industrial relations.

d) Marketing factors. Alexander pleads for some precision in this woolly area of the product elimination process. In order to combat hazy explanations for keeping low profit products like "company image" or "full line policy" or "complementarity" he suggests that all these factors be carefully analysed "on the basis of their effects on the firm's sales volume, profit and capacity to survive and grow".

e) Other possibilities. Consideration of the above four areas is bound to throw light on some "corrective measures". Alexander envisages 4 fertile areas for improving products:

- (i) Costs may be reduced by increasing batch sizes or otherwise lowering production costs.
- (ii) Marketing activity can either decrease profits (eg. reduction in promotional activity or in service levels) or increase sales (eg. increased promotional activity, adding value to the product).
- (iii) Price increases can increase profits, yet need not result in dramatic sales drop.
- (iv) Production can be increased by manufacturing, not only for yourself, but for the competition.

3) The Deletion of A Product

Alexander is the first author known to consider the opportunities and threats presented by the implementation of the decision to drop a product. He advocates the completion of plans to deal specifically with the timing of the phase-out, the replacement of parts, the run-down of existing stocks and the question of any holdover or residual demand for the product which might exist after deletion.

Alexander's contribution to the literature existing at the time was enormous, largely due to its comprehensiveness. He takes the reader through the sequential process, identifying a considerable amount of factors which should be appraised, yet insisting upon the dangers of too much calculation and so-called objectivity and revealing the amount of qualitative managerial judgement called for by a decision of this nature. In short, it is the first article which hints at the complexity of the issue which was to be revealed only very slowly in the course of the next 20 years. While recommending that the weights assigned to the factors should be chosen in "light of the situation in the firm and the management objectives", Alexander makes no attempt to impose any framework for this. He also recognised that a decision of this nature would not only be influenced by company factors, but that it requires "that the factors be weighted differently in each case" (my emphasis). While this observation may seem obvious, it is astonishingly ignored by all but a few very recent writers. He tends to skim over the vast amount of information he implies is at hand, notably the information relevant to the product's profitability. In summation, Alexander convincingly describes the pitfalls of shoddy product elimination decision-making, but rather begs the question of how to avoid them.

3.4.6 Kotler (1965)

Kotler endorses Alexander's (1964) view of the elimination process as multi-staged and sequential comprising recognition, evaluation and decision-making and implementation stages. He forwards a 2-phased procedure to deal with the decision: a "creation stage" and an "operational stage" which has 6 steps. (see Figure 3.4)

1) Creation Stage

This stage has a double purpose: assignment of responsibilities among members of a review committee and the development by this committee of a product control system comprising criteria and procedures that will be used to evaluate products.

2) Operational Stage

This stage is divided into 6 steps and should be effected annually. The steps are presented below.

Step 1 The purpose of this step is to assemble relevant information about products and to spot dubious products. Kotler recommends a product data sheet which tabulates data deemed relevant. A sample data sheet is given in Figure 3.5.

Step 2 This stage seeks to identify candidates for elimination. Kotler proposes the use of a computer which can scan the data sheets and select "dubious" products against the criteria established by management at the creation stage.

Step 3 This is the formal assessment of whether or not the 'dubious product' should remain in the range. The criteria against which a product might be rated must be defined at the creation stage, incorporating various managerial perspectives, (accounting, sales, etc.). Kotler does suggest some criteria which may be of use: future market potential, modification potential, potential for marketing adjustments. A positive analysis on some or all of these counts would point towards retaining the product in some

form. He also suggests evaluation of factors such as the financial contribution made by the product in excess of direct costs, and the extent to which the product contributes to the sale of other products. On the other hand, factors pertaining to the opportunity cost represented by the product include the potential amount of executive time released by dropping the product and the scope for alternative opportunities within the company; such factors should also be discussed at step 3. As not all the factors chosen will be considered to be of equal importance, they should themselves be weighted at the "creation stage".

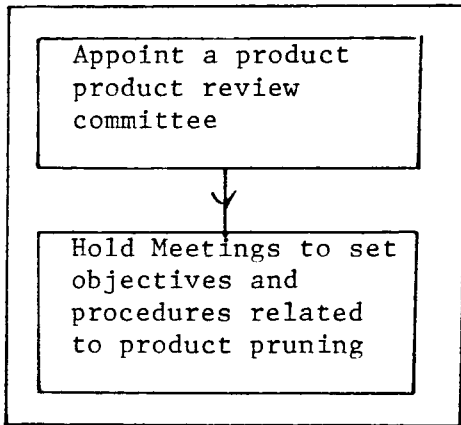
Step 4 Attempts to compute a "product retention index" from the rating given to the product on each of the counts discussed in step 3. While the fate of some (obvious) cases may be decided at step 3, for the remaining dubious ones, a "retention index" is calculated using a "seven" scale product rating form (see Figure 3.6) final figure. The maximum retention index is 7.

Step 5 This step calls for a further meeting to discuss the retention index obtained and to make the final decision. Kotler stresses the subjectivity of this stage and the impossibility of simply establishing a cut-off point below which no product is retained.

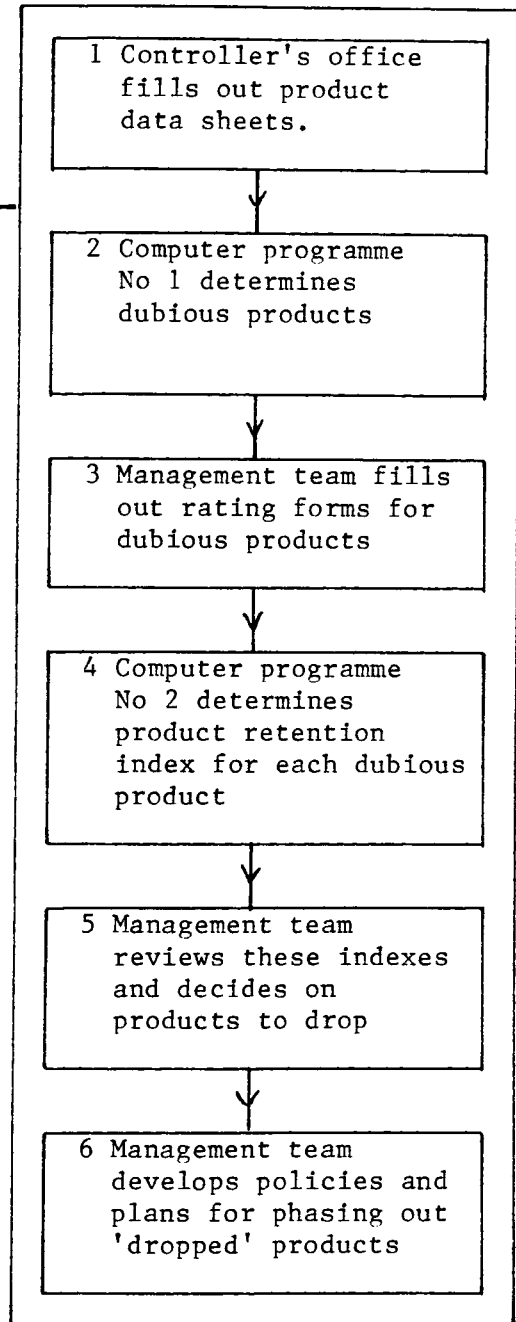
Step 6 This step is when the actual removal is implemented. Two strategies are identified: dropping immediately and "milking" - or carrying the product at very low levels of production, salvaging as much contribution as possible in the last months of the product's life. Factors influencing the choice of strategy are listed: finished and unfinished stock levels, guarantees and compensations to be offered to distributors and customers, timing of transfer of researchers to other ventures, salvage value of plant, equipment and stock, customer relations.

Figure 3.4 Schematic Overview of Kotler's Model

Phase 1
Creation



Phase 2
Operation



Source: Kotler, P (1965) "Phasing Out Weak Products", Harvard Business Review, 43, March - April

Figure 3.5 Kotler's Product Data Sheet

PRODUCT NO	_____
MODEL NO	_____
DATE	_____

		Past Years			
		3	2	1	Current
Industry sales	\$	_____			
Company sales	\$	_____			
Physical volume		_____			
Unit total cost	\$	_____			
Unit variable cost	\$	_____			
Price	\$	_____			
Cyclical adjustment factor		_____			
Overhead burden		_____			

COMMENTS _____

Source: Kotler P (1965) "Phasing Out Weak Products", Harvard Business Review, 43 March - April.

Figure 3.6 Kotler's Seven-scale Rating Form

PRODUCT NO _____

MODEL NO _____

DATE _____

	WEIGHT (W)		RATING (R)	
1	What is the future market potential for this product?	_____	.0 .2 .4 .6 .8 .10 Low High	$W_1 R_1 =$
2	How much could be gained by marketing strategy modification?	_____	.0 .2 .4 .6 .8 .10 Nothing A Great Deal	$W_2 R_2 =$
3	How much could be gained by marketing strategy modification?	_____	.0 .2 .4 .6 .8 .10 Nothing A Great Deal	$W_3 R_3 =$
4	How much useful executive time could be released by abandoning this product?	_____	.0 .2 .4 .6 .8 .10 A Great Deal Very Little	$W_4 R_4 =$
5	How good are the firm's alternative opportunities?	_____	.0 .2 .4 .6 .8 .10 Very Good Very Poor	$W_5 R_5 =$
6	How much is the product contributing beyond its direct costs?	_____	.0 .2 .4 .6 .8 .10 Nothing A Great Deal	$W_6 R_6 =$
7	How much is the product contributing to the sale of the other products?	_____	.0 .2 .4 .6 .8 .10 Nothing A Great Deal	$W_7 R_7 =$
Product retention index _____				

Source: Kotler P, (1965), "Phasing Out Weak Products",
Harvard Business Reveiw, 43, March - April.

Kotler operationalises many of the factors raised by Alexander, and also suggests a time and place for the procedures he presents. However, it does require an inordinate amount of executive time, as from step 3 executive participation is demanded. Reduced to its quintessence the "6 step procedure" can be viewed as 3 stages. Steps 1 and 2, identifying elimination candidates, steps 3, 4 and 5 incorporate appraisal of the value of dropping the product and step 6 is the implementation. The executive time and organisational effort required for the model seems to be excessive although this can be reduced by narrowing the scope of discussion after step 1 to only those products whose performance is weak, and after step 3 to only the most contentious decisions. However, since the "real" decision is as subjective as less formalised approaches, the prescribed formality is of limited value. Perhaps the most glaring omission on Kotler's part was in his failure to discuss the "creation" stage. As these stages formulate objectives, factors and procedures, it would have been interesting to see how it could be operationalised. Despite its contribution to systematic and comprehensive thinking, Kotler's model deftly evades what are arguably the most tricky parts of product elimination decision-making.

3.4.7 Clayton (1966)

Clayton's two-page article concentrates on the decision-making stage of the product elimination decision. He describes a formula for obtaining what he calls a "survival score index" (SSI).

$$SSI = \frac{A \times B \times C (D-E) \times F}{G H I}$$

Where

A = The probability of the product meeting its return on investment goal

B = The probability of continued sales success

C = Projected sales volume, by unit and by year

D = Sales price per unit

E = Manufacturing costs per unit

F = Remaining market life

G = R and D costs required to continue the life of the product line

H = Process and product engineering costs needed to continue the product line

I = Marketing costs required to continue the product line.

The components of this formula were inspired by Berenson's 5 "critical areas". While the scope of such a brief article is limited, several more serious criticisms of the model; should be voiced. Firstly, neither the logic of the formula nor the theoretical basis of the model are explained. Secondly, procedures which might help management rate the products against the suggested criteria are cited. Thirdly, the criteria themselves are ill-defined. Finally, the multiplicative nature of the formula means that a 0 rating on 1 criterion will reduce the SSI to 0, leading to 'automatic' discontinuation of the product.

3.4.8 Talley (1964) and Weller (1969)

Increased profits during the final stages of the PLC is the subject matter of these two articles. Both authors identify 4 options open to management upon discovery of a "dubious" product: product deletion, product revitalisation reduction in the variety of the product or run-out, which involves minimising production and marketing expenses in order to maximise profits. Both deal with the 4th strategy, the run-out, which has several advantages:-

- 1) It minimises further investment in failure
- 2) It creates additional profitability which can be devoted to developing and launching a replacement
- 3) It capitalises fully on past marketing investment
- 4) It provides greater scope for a planned phase out-phase in.

However, there are a number of indicators which allow management to judge the suitability of adopting a "run-out" strategy:

- 1) Market Trends Where the market is stagnant or declining, and this phenomenon is mirrored in declining sales, represents some "enabling conditions" for a run-out
- 2) Customer Loyalty A relatively high level of customer loyalty and its corollary - price inelasticity - is a precursor to successful run-out.
- 3) Effect of Advertising Where no relationship between increased advertising and increased sales is observed, makes sense to execute a "run-out".
- 4) Competitive Strength If the competition has a significant Marketing advantage which cannot be matched "affordably", the strategy is ill-advised.
- 5) Distribution Where the distribution system offers a variety of different brands, the run-out of one brand will be less perceptible.
- 6) Manufacturing Cost Where the total cost of the product comprises a higher percentage of raw material costs than fixed costs, the potential savings of a run-out strategy are great.
- 7) Replacement Availability Where a replacement product is ready to be launched onto the market, a run out strategy is more feasible.

That there are various strategies for dropping products is not widely acknowledged in elimination literature. Talley and Weller only mention straight product deletion and variety reduction as examples of other strategies, without any explanation of these. However, their works go some way to opening doors for this aspect of product strategy, which suggests that, even when management has decided to "pull out" of a product, it can still be engaged in "product management" to reap the maximum benefit for the company.

Interestingly, Talley and Weller point out that a substantial change in management and organisational perspective may be needed to execute the various strategies properly. For example, in the case of a run-out, pure volume targets would be a barrier to adopting a low volume (but high profit) strategy.

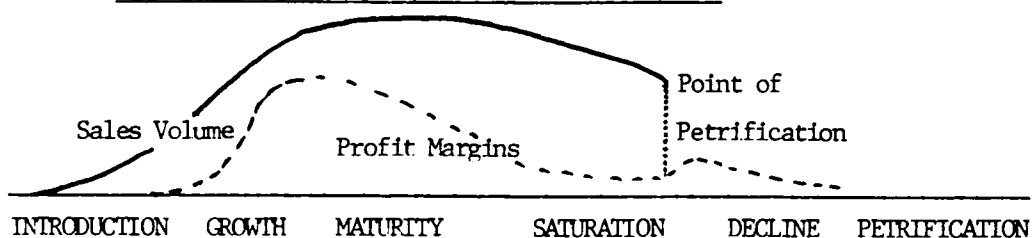
However, these works can be criticised for appearing in some ways to ignore both the constraints and opportunities of the real world. By way of illustration, it is suggested that a run-out strategy is advisable when a market is declining because there is little point spending money to enlarge the share of a declining market. This ignores the opportunity that a declining market offers to a smaller company when larger firms have moved on. Equally, it ignores the fact that it might not cost a company anything to increase its share of such a market. Finally it ignores that the small amounts which might have to be produced for such a market may be costly and inconvenient for some companies. In summation, then, while these works open up a "new angle" on the product elimination subject area, they suffer from the assumptions that a lack of empirical knowledge forces them to make.

3.4.9 Michael (1971)

Michael develops a model for managing a relatively unexplored phenomenon of the product life cycle: product petrification. The product petrification stage is reached when

"the sales and profit curves do not stop abruptly, but continue in time beyond a levelling or "petrification" point. In the product petrification stage, the rate of sales decline is constant or slower than in the declining stage, and, more important, profit margins are higher" p.88.

Figure 3.7 Michael's product Petrification Cycle



Source: Michael, G C (1971), "Product Petrification: A New Stage in Life Cycle Theory", California Management Review, 14 (1).

One of the difficulties in managing this stage of the life of the product is actually identifying those products which have entered the "petrification stage" and distinguishing them from products which are simply moribund. Michael suggests that there are 5 indicators which aid this distinction:

- 1) Consumers tend to continue to seek the product through the regular channels
- 2) The number of letters sent to the manufacturer complaining of the product's lack of availability increases
- 3) Competing or substitute items in the product line enjoy an otherwise unexplained sales boost
- 4) The rate of sales decline is not increasing, and is at least constant
- 5) Demand for the product is somewhat inelastic.

The basic objective is to reap full benefit from the "petrified" product, and the strategy for doing this comprises 2 fundamental elements. Keeping costs associated with the product, advertising, packaging to an absolute minimum, and possibly increasing the price. Such a strategy is to be pursued until the sales decline to the point where variable product costs or direct costs are not covered.

This strategy has to be carefully organised according to Michael. "Internally", this amounts to little more than eliminating the

product's marketing overheads: advertising, promotion etc. Externally, Michael suggests that an "opposite" form of venture management be instituted to facilitate profitable exploration of the petrification stage. Venture management is usually associated with new products, where a team is given complete responsibility for managing the new product and where remuneration is largely dependent on the performance of that new product. The petrification venture team, on the other hand, should be given full responsibility for the profit performance of the product, and presumably regular, product or marketing management would be relieved of all such responsibility, as it might interfere with their regular targets.

While the strategy described by Micheal is interesting and potentially highly profitable, it suffers from several shortcomings:

- 1) Its value is almost entirely dependent upon the ability to distinguish products which might enter the petrification stage from those which are simply dying. This, however is neither adequately described, nor operationalised.
- 2) While considerable investment, especially in manpower and original restructuring would be required to execute such a strategy, there is no indication of how prevalent petrified products are in product mixes, nor how profitable exploitation of this stage might be.
- 3) There is no discussion of any implications which might be harmful to the company adopting this strategy.

3.4.10 Rothe (1971)

Rothe's work is based on the findings of an empirical study. From a sample of 500 firms in the drugs, food, clothing, major and minor appliances industries, he received 174 useable responses. The survey was primarily carried out using a mailed questionnaire, although 4 personal interviews helped shape the format of the questionnaire. However, it is Kotler's prescriptive framework

which was ultimately used to generate descriptions about the product elimination decision, which is viewed as a multi-staged process. Its major objectives were to determine:

- 1) the decision process used to eliminate products, the factors considered at each stage in the decision, and their relative importance.
- 2) the organisation and structure of the decision process in the company.
- 3) the differences that exist among industries.
- 4) the perceived advantages and disadvantages of the product elimination activity.
- 5) the state of development of product elimination procedures and systems.

The measurement of dependent variables by Rothe was largely carried out using the constant sum or "100 point measurement" technique. Independent variables were measured using Likert-type scales, ie. degree of technological development, length of the product life cycle, diversification, size and innovativeness.

Investigation of the product elimination procedures was carried out by examining the extent to which any procedures were a) written down or put in a formula, b) computerised, c) planned and periodically conducted, d) subject to a formula or a precise quantitative method.

The major results of the mail questionnaire are as follows:

- 1) In most companies, product elimination was thought to be about a third of the importance of new product development or modification of existing products.
- 2) The factors used to identify weak products, by order of importance were:- minimum sales standards, minimum production runs, and minimum market share. (The glaring omission of profitability is probably due to the fact that it was not included in the questionnaire).

- 3) Top management and marketing management dominate the decision-making process.
- 4) The factors used to diagnose the cause of the products poor performance are, in order of importance, the profitability of the product, the market position of the product, investment in the product, product costs, alternatives to elimination.
- 5) Given the choice between 'milking the product' and immediate withdrawal, immediate elimination was found to be the more frequent, followed by a combination of the two strategies as consumer markets tend to be more price elastic than industrial markets, it is not surprising to find a majority of consumer goods manufacturers 'dropping immediately'.
- 6) Rothe found that the major and minor appliance industry tended to have more formalised elimination procedures than both the food and drink industries. While Rothe does not hypothesise why this should be so, it seems reasonable to suggest that the major and minor appliance industry, manufacturing such items as vacuum cleaners, hair dryers, food mixers or D.I.Y. implements is more subject to the dictates of fashion than are the food and drug industries.
- 7) The formality of the decision procedure was not seen to influence the choice and rating of factors used in the elimination process. However, as the degree of formality was assessed with only two, somewhat crude measures it is difficult to draw universal conclusions from this finding.
- 8) An examination of the problems affecting product elimination decision-making reveals the following obstacles: lack of top management interest, sales force resistance to elimination, lack of interdepartmental cooperation, lack of regular routines and procedures.

Although the description given by Rothe of product elimination decision-making is rather sketchy, it does reveal how "deviant" real-life procedures are from those prescribed in the rarified atmosphere of academic thought. However, the emerging tableau is far from complete. This is partly due to the fact that the bulk of

his questionnaire was based on factors decreed important by the literature, thus limiting the scope of the answers, and partly to the fact that only the views of the marketing department were investigated. The only contextual influences he investigated were the industry and amount of formality, neither producing any remarkable insights. However, while Rothe did not produce the thorough understanding of product elimination decision-making he might have wished, his findings should have served as a salutary warning that real-world procedures bear little resemblance to the normative recommendations. It is surprising to note that although a very clear signal had been sounded, revealing the informal, unquantified, qualitative procedures existing in industries, a great many theoreticians continued to expound the virtues of formalised procedures, regular review committees, weighing, balancing and using standard forms.

3.4.11 Baccour 1971

The author presents findings from a depth investigation of eleven companies in various industrial classifications. While his unidentified population and unspecified sampling methods do not lend much external validity to his work, the investigation, consisting of personal interviews with executives, goes a long way towards describing behaviour left undiscovered by mail survey techniques. The major findings of his work are as follows:-

- 1) Few companies have systematic, formal elimination procedures.
- 2) Selection of weak products liable to further analysis is done by product managers.
- 3) Value analysis* is performed on products annually.

* Value analysis is a means of reducing the product cost by a reduction or alteration to the components, ingredients or chemicals that comprise it. For example, a manufacturer of furniture may increase the number of table tops manufactured from a quantity of wood, by a reduction in size of as little as 1cm.

- 4) While each product or product class is targeted, techniques used are far from sophisticated.
- 5) In the semi-annual product review meetings which characterise most of the companies, the following factors are audited (i) sales volume, (ii) net change from last period's sales, (iii) market share and its change from last period, (iv) gross margin per unit, (v) contribution to overhead expenses (vi) variable unit cost (vii) total industry sales, (viii) average industry price.
- 6) The following factors are monitored in order to diagnose fully the "problem" product: (i) production and selling costs compared to set standards, (ii) current level of investment in the product, (iii) investment needed to revitalise the product, (iv) investment needed to continue the product.
- 7) When actually deciding the fate of the product, 2 sets of factors were seen to be determinant. The first set relates to the cost of the product and includes, levels of current and future profitability, the contribution made by the product to overheads, the effect of retaining the product on overall profitability, opportunities to which the product could be diverted. The obvious concern here is to appraise the financial health of the company were the product to be kept against the financial health subsequent to its deletion. The second set of factors is far more qualitative and includes the effect of the elimination on future consumer relations, the social effects of eliminating on employees, communities etc., the effect of the elimination on company image, the effect on trading customers' relations, the extent to which the product serves long-term objectives, the existence of substitute products on the market, the effect of eliminating on any complementary products, the possibility of using the product as a loss-leader.

- 8) When determining the timing of the deletion, residual demand is seen to be the most important factor.
- 9) As with Rothe's findings, the sample companies tended to drop immediately rather than phase-out slowly, implying a somewhat uncomplicated implementation with few "residual demand" or "spare part" considerations.

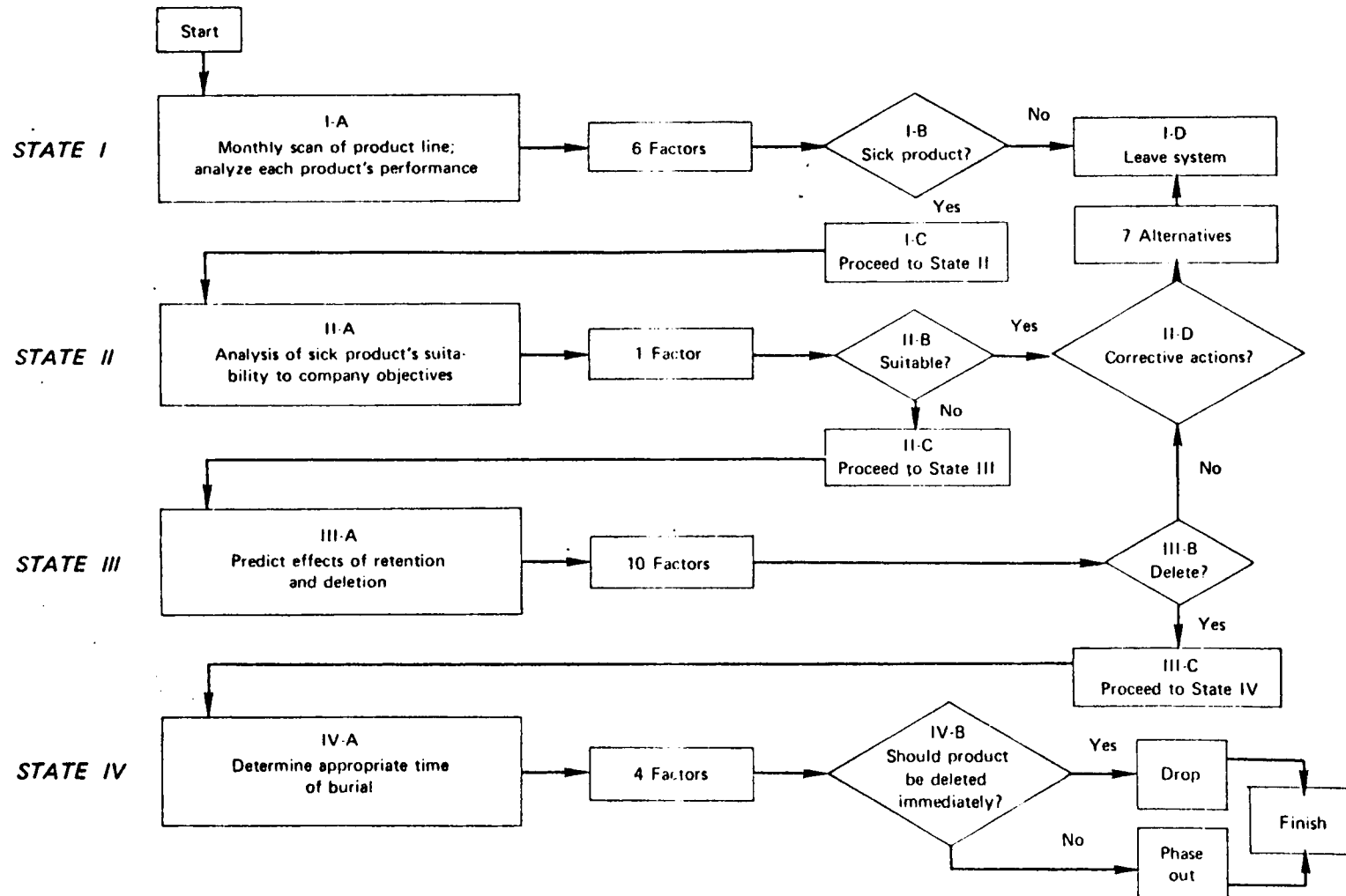
Baccour's work is limited to determining the factors used by companies to identify and evaluate elimination candidates. Perhaps the most striking finding is that the number of qualitative factors far outweighs the number of quantitative factors, which perhaps goes some way to explaining the apparent shortage of procedures and rules observed in industry by nearly all investigators to date. Had Baccour's work been more widely disseminated, through journal articles, it might have served as an interesting point of departure for investigation of these numerous and qualitative factors, the effect they have on the total elimination decision and how they might be incorporated into a meaningful model.

3.4.12 Eckles (1971)

An analysis of data collected in the veterinary ethical drug industry and the small electrical goods manufacturing industry led Eckles to conclude that the basic error of management is the basic failure to establish a definite procedure for the deletion of weak products, with authority and responsibility for various activities clearly and definitely defined. He therefore proposes a 4 staged model (see Figure 3.8).

The first stage (or state as Eckles calls them) comprises a monthly scan of the entire product line, using 6 factors: inventory requirement past sales volume, future sales volume, profit margin competitive activity and the total generic demand - demand for that type of product generally. Although no cut-off points are suggested, a product which falls at this first stage goes on to stage 2.

Figure 3.8 The Product Deletion System



Source: Eckles, R W (1971), "Product Line Deletion and Simplification", Business Horizons, October

The second stage attempts to examine the product's suitability to company objectives. If the product is deemed suitable (no operationalisation given to help determine this) any of the following corrective actions may be applied: promotional activity, price change, product change, cost (value) analysis, development of a new market, or a formula change. If a product is "not suitable" it goes on to the third stage.

The third stage attempts to analyse the various effects on the company of retention or deletion. This evaluation centres on the following factors: past costs of the product, future costs, past and future profitability of the product, "scope" of the line (ie what other functions might it fulfill - satisfying customers or distributors/keeping competition out of the market, keeping to "full-line" reputation) new product research (ie the likelihood of a replacement coming on stream) consumer satisfaction, using production and warehouse facilities (ie is the product using valuable production and warehouse resource, and if it were dropped could this be used more profitably?) production problems, marketing problems. Again, this stage is characterised by a large number of highly contentious issues.

The fourth and final stage relates only to those products which are to be eliminated. It concerns the actual timing of the deletion, which is set after deliberation on the following issues: stock on hand - the run down of both finished goods and raw materials, holdover or residual demand - which may have to be catered for after official deletion of the product, the effect of the timing on profitability, the status of replacement parts, which may need several years' stock.

Eckles' most serious omission is that no means of measuring the factors he suggests is given, and no decision rules are forwarded. Many of the factors themselves are ill-defined. He assumes that the data for stage 1 are readily available, and no indication is given as to where information needed to define and evaluate factors

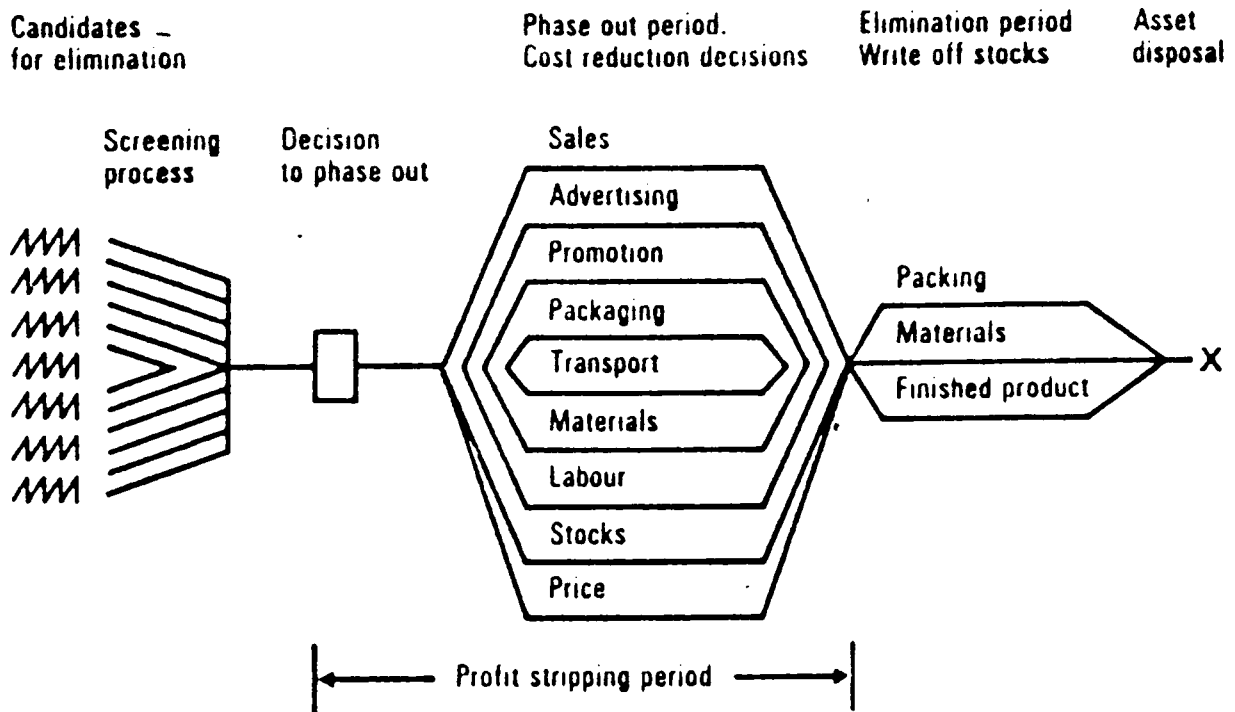
at other stages in the decision may be found or generated. In addition, Eckles does not examine any of the alternatives to elimination that he suggests, nor does he mention who might be in a position to execute the involved procedure that he describes. More seriously, no account is taken of any circumstances peculiar to a firm or a product to which the model should and could be adapted.

3.4.13 Winkler (1972)

Winkler spends a few pages in his book Winkler on Marketing Planning discussing the issue of product elimination. Drawing on the work of Houfek (1952) he advocates a formal review of product performance which should take place at least annually. This committee, made up of all executives affected by the decision to drop a product, should have the responsibility of dropping a certain number of products. With reference to Alexander (1964) he points out that the discharge of such a responsibility involves identification of elimination candidates and evaluation of the financial effect of dropping the product. Issues again are those suggested by Alexander. In some detail, Winkler focuses on the period after the decision has been taken, a period he describes as asset or "profit stripping" which, simply put, involves reducing as far as possible the cost of those factors not essential to the producer's functional performance. These factors are depicted in Figure 3.9.

Winkler argues that this planned approach will ensure, not only that finished goods and working capital costs are kept to an absolute minimum, but that disposal of assets will also be simplified.

Essentially interested in the run-down or profit stripping, Winkler's contribution is logical and attractive. Its feasibility however is, as yet, untried, untested and subject to some doubt as there is no discussion of the issues and problems raised by such an approach.

Figure 3.9 Winkler's Product Elimination Process

Source: Winkler, J (1972), Winkler On Marketing Planning, Associated Business Programmes.

3.4.14 Hamelman & Mazze (1972)

The PRESS model details 4 inter-related computer models requiring standard cost accounting data and some past and projected marketing data. The model is designed to embrace the whole product line and to assist management in identifying those products which are candidates for deletion. Indeed, this is the many functions of PRESS 1. PRESS 2, 3 and 4 explore revitalisation opportunities, possibilities for future success and impact of abandonment on the firm respectively.

PRESS 1 seeks to identify weak products, relying on information regarding material cost, labour cost, variable overhead costs, sales price, quantity sold per period, sales and administrative expenditure, manufacturing runs per period. Arbitrary allocations of fixed overheads are omitted. This primary model results in a standard performance ratio for each product, which indicates

how much labour and variable overhead become available for redeployment should a product be eliminated. A second result of PRESS 1 is the "Selection Index Number" (SIN), a vehicle for direct product comparison. SIN exhibits the products resource utilisation and contribution to renewal:

$$SIN_i = \frac{(CM_i / \sum CM_i)}{FC_i / \sum FC_i} \times (CM_i / \sum CM_i)$$

where

- SIN_i = Selection Index Number for Product i
- CM_i = Contribution Margin for Product i
- FC_i = Facilities Costs for Product i
- $\sum CM_i$ = Summation of Contribution Margin of all Products
- $\sum FC_i$ = Summation of Facilities Costs of all Products

"Facilities costs" includes all the primary resources available to the firm: labour, variable overhead, sales and administrative expenses, plant and equipment and working capital.

The authors suggest listing products in decreasing order of SIN numbers, the least profitable products appearing at the bottom of the list. Such products are prime suspects for deletion, but the precise tolerance level must be established by management.

PRESS 2 attempts to examine the effect of a price change on the contribution margin of specific products that management wishes to examine. It provides the marginal increment or decrement on total contribution margin based on a projection of price-volume by management. It therefore helps to analyse the product and isolate a few corrective alternatives.

PRESS 3 continues the analysis of the product by attempting to identify products likely to become good performers by extrapolating the current and previous years' sales. These projected sales can

replace "current year sales" and a new SIN index can be calculated, however this is really part of the "evaluation phase".

PRESS 4 fulfills the 'evaluation and decision-making' function. Two variables are considered: the complementary relationship between deletion candidate and other products in the range; the existence of substitutes in the market. An assessment of the product in light of these two factors is made by the marketing manager. Information is supplied by marketing research, salesmen, brand managers and others who are sensitive to demand patterns. The final analysis calculates RESIN where the original SIN value is adjusted upwards for tie-in sales lost due to deletion of the products, or downwards for any replacement sales which would result if the product were deleted. The final step in PRESS 4 is a "stepwise product deletion iteration", which eliminates products one at a time, starting with the lowest RESIN number. This iteration is done in line with managerial targets for reduction in costs.

This model is the first to detail carefully the level and nature of accounting data necessary to appreciate fully a product's performance. However, it does have several limitations. Firstly, the extensive cost data is assumed to be at hand, in addition, the actual setting of the tolerance level is not guided in any way. Secondly, some of the measurements in PRESS 2, 3 and 4 are somewhat rough and ready. PRESS 2 consists of managerial opinion; PRESS 3 relies on an extrapolation of trends in sales/profit without considering changes in price, costs or competition; PRESS 4 relies on managerial judgement on only 2 factors when previous work had already outlined the scope of "evaluation factors". This is not to say that managerial judgement is inadequate. However, the model does foster an aura of objectivity and computability which, reading between the lines, does not exist.

Some serious criticisms have been forwarded by Armstrong: (1973)

- 1) There is no justification for estimating the SIN index as a ratio of the square of product's contribution to its resource utilisation. This squared ratio ignores any product with a negative contribution, and naturally favours products whose contribution margins are high, regardless of their possible disproportionate resource usage.
- 2) Hamelman and Mazze do not explain the mechanism by which RESIN adjusts the SIN index.
- 3) A further criticism is the neglect of a number of marketing mix variables which are not accounted for, eg: advertising, distribution, design, competitive actions. While the authors do incorporate the effects of price change on product profitability, these other factors which bear directly on profitability remain unexplored.
- 4) The final criticism levelled by Armstrong is that complicated relationships such as price/volume or substitutability cannot adequately be assessed by management.

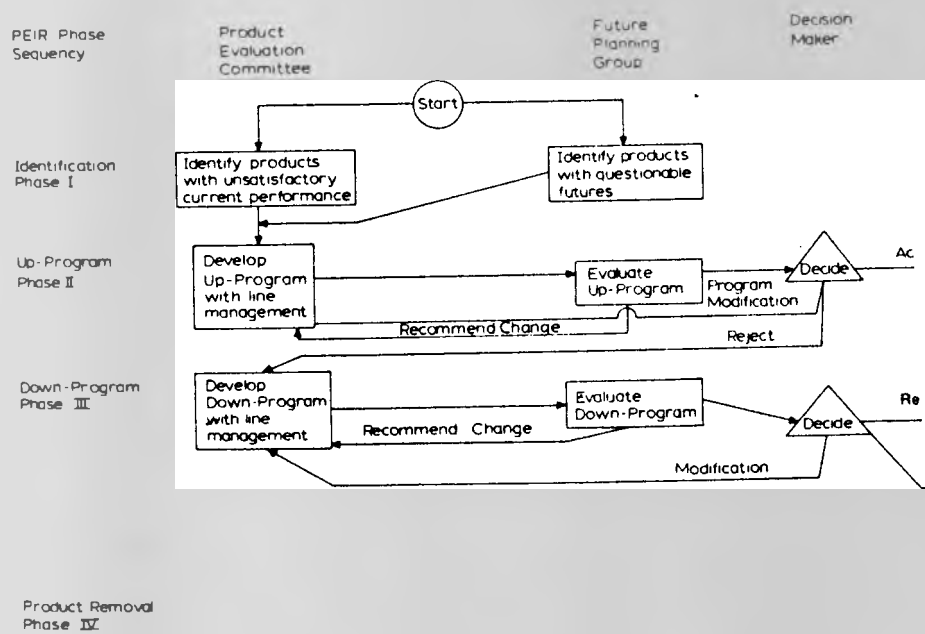
3.4.15 McSurely & Wilemon (1973)

The major thrust of this article is aimed at the organisational level (department or factory) rather than at the individual product model level. The authors discuss a systematised model for Product Evaluation, Improvement and Renewal (PEIR Model) which claims universal application. The PEIR team should consist of individuals without vested interest in the product. The PEIR decision model comprises 4 stages (see Figure 3.10).

Phase 1: Identification of Product Elimination Candidates.
The identification of weak products is based on 2 distinct

elements: future planning and a mandatory, periodic review of all product lines. The first element ensures the regular consideration of the products compatability with company objectives, while the second element embraces the more pedestrian measures of performance, such as past and present sales volume, total sales, gross margin and performance compared to company standards. The need to develop criteria reflecting current operating objectives of the firm is underlined. Also emphasised is the importance of using a computer and objective financial formats to identify quickly any deviant product. Questionable products identified either by the future planning group or the evaluation are assessed by the Peir team who, by careful screening, "can limit its efforts to those which are likely to have the greatest impact on the company" p.323. There is no description of this careful screening. Those products which are deemed suitable for further analysis proceed to phase 2.

Figure 3.10 Mc Surely and Wilemon's PEIR Model



Source: McSurely, H B and Wilemon, D L (1973), "A Product Evaluation, Improvement and Removal Model", Industrial Marketing Management, 2.

Phase 2: The Up-Programme (Consideration of alternative revitalisation methods).

At this phase the PEIR team has to work closely with the product manager, who is excluded up to this point due to his 'vested interest'. The management of this relationship is crucial "the PEIR team's function is not to supplant the (product) managers function, but to help him" (p.324)

Several methods of revitalising suspect products are suggested: lowering the manufacturing costs, augmenting the physical product, enhancing the product's image or style. While no clear choice-criteria are discussed, the measure chosen should be compatible with the other marketing programmes of the company. Essentially choice-criteria should be selected by the PEIR team, although the authors stipulate that these ought to be financially-orientated, so that the potential product improvement programme may be compared with other investment opportunities. These forecasts can also be compared to the projected outcome of the do nothing option. Beyond attaining the widest use of company resources no operationalisations or decision-rules are suggested.

Phase 3: The Down-Programme Phase (Evaluation and decision-making).

The down programme is concerned with ailing products which are not selected for improvement, and evaluation of the effect of the product's removal on the company. The following relevant factors are discussed: the possibility of reallocating any fixed costs released to other ventures, the effect of the deletion on the defrayal of overheads, the opportunity cost represented by retaining the product, the effect of the deletion on any complementary products, or on customer relations. The authors argue that, although difficult, the PEIR team should try to obtain a reasonable, rational estimate of the impact of deletion. They propose a checklist to aid this stage. (See Tables 3.5 and 3.6).

Phase 4: Product Line Removal Strategy Selection (Implementing the removal decision).

In this model, the choice of methods of implementing the decision is based on 4 factors: the amount of inventory left, any existing orders, the availability of a replacement, and the amount of costs which might be incurred if the company were to drop immediately. Depending on these factors, which may be evaluated using the checklist provided in table 5 and 6, the forward planning group selects one of the following strategies: selling out (or factoring) to another company, dropping immediately, or running out. The timing of the deletion should be controlled by a detailed plan (see table 3.7).

The PEIR model is one of the first to attempt to specify how the recognition, evaluation and withdrawal of suspect products might be integrated into existing managerial methods, and a number of important factors are underlined:-

- 1) Ultimately, products in maturity, as well as those which are incompatible with corporate strategy are in the firing line, thus making the elimination process more of an activity related to long-term planning.
- 2) If control over the actual removal of the product is to be effected, then a written plan should be developed and commitment to it should be obtained by everyone involved.
- 3) It is necessary to review the plan to determine whether or not it is on time, to measure results and to serve as calibration for future programmes.

Table 3.5 Demand Impact of Product Removal

Pre-Phase Out		Post-Phase Out		
Product Line	Current Demand	Current Total \$ Contribution to overhead	Expected Demand	Expected Total \$ Contribution to Overhead
A				
B				
C				
D				
E				
F				
G				

Table 3.6 Resource Impact of Product Removal

Resources Involved	Number	Dollars	Alternative Users	Benefits	Potential Problems
Marketing Executive					
Other Salary					
Indirect Hourly					
Financial Executive					
Other Salary					
Indirect Hourly					
Engineering Executive					
Other Salary					
Indirect Hourly					
Personnel Executive					
Other Salary					
Indirect Hourly					
Direct Hourly					
Facilities					
Equipment					

Source: McSurely H B and Wilemon D L (1973) "A Product Evaluation, Improvement and Removal Model", Industrial Marketing Management, 2.

Table 3.7 Sample Phase-Out Timetable for Marketing

Marketing Timetable	Notify	Commence	Complete
Management	January 1		
Other personnel	X		
Distributors	X		
Transportation companies	X		
Retailers	X		
Customers	X		
Advertisers	X		
Stop receiving orders			X
Determine warranty and other obligatory requirements		X	X
Negotiate contractual obligations		X	X
Disposition of stock if finished goods		X	X
distributors		X	X
retailers		X	X
Extract product from salesmen's handbooks and other marketing active files		X	X
Transfer personnel	X	X	X
Transfer equipment	X	X	X
Layoff	X	X	X
Early retirement	X	X	X
Scrap and salvage appropriate materials and equipment		X	X

Source: McSurely H B and Wilemon D L (1973) "A Product
Evaluation, Improvement and Removal Model", Industrial
Marketing Management, 2.

On the other hand, some of the issues raised by McSurely & Wilemon give rise to problems themselves. For example, the recommendation of setting up a PEIR team to work in conjunction with the product manager is likely to run the risk of institutionalising conflict. Extreme care would be needed to delineate responsibility and specify jobs. The undercurrent assumption that "financial measures" are equal to "objective measures" is somewhat misleading in that almost every objective financial measure which is related to the future has to be judged by the PEIR team.

To summarise, McSurely & Wilemon's article is helpful in its integrative perspective of the product elimination decision, but it raises almost as many queries as it solves and it fails to describe precisely how the criteria for each phase might be developed or evaluated.

3.4.16 Fluitman (1973)

Fluitman's article is a thoughtful discussion of how an industrial product mix might be evaluated. A kind of portfolio appraisal, its scope covers how the best balance of the range might be achieved, rather than an evaluation of individual product's merits and shortcomings. Generally the range can be split into three: bread-and-butter line products, specialities and failures. On closer inspection bread-and-butter line products can be further divided:

- (i) Bread-and-butter line products of tomorrow: characterised by above average yearly growth.
- (ii) Faded-out products: are those rising stars which burned out due to lack of resources and/or investment. These should more appropriately be included alongside the failures.
- (iii) "Investments in managerial ego" is a self-explanatory category of products retained in the range without much justification. This category is also more appropriate to the failures.

- (iv) "Sleepers" defines the forgotten, neutral performers whose price-performance ratio is mostly good. While this category does belong with bread-and-butter products it does represent something of a sitting duck for competitive attack.
 - (v) The bread-and-butter products of today are vital because they finance the future. They are characterised by a growth rate of 3.5 - 7 per cent and healthy profits. They generally deserve more investment than they get.
 - (vi) Bread-and-butter products of yesterday no longer show any growth. Profitability is poor, and action should be taken to replace them soon.
- 2) Specialities include products which have special applications in special markets. They reach a high share of their market and show good profits.
 - 3) Failures, along with those products which hide under the bread-and-butter classification, includes those products that never got off the ground.

After the products in the total mix have been classified they can be tabulated in such a way as to show how much turnover is generated by each type of product, and how much of the resources is absorbed by each product.

3.4.17 Banville & Pletcher (1974)

The findings reported in this article are taken from Pletcher's DBA dissertation (1971) and are based on responses of 21 mailed questionnaires and three personal interviews in the small home appliances industry. The framework for the questionnaire was derived from a combination of pilot testing, three personal interviews and a literature review. The nexus of the investigation, the elimination decision process, was not divided into separate decision-stages. The survey had four

objectives: to identify the variables relevant to deciding whether to eliminate a product experiencing poor sales despite a generally bouyant market; to determine the relative importance of these variables, to examine the interaction of these variables, to investigate the nature and locus of the decision-making process.

The main findings of this research centre on four sets of variables. The sets are made up of variables with similar levels of importance, and are presented below.

Table 3.8 Banville and Pletcher's Decision - Variable Classification

Group 1

Dollar sales	dollar value of shipments
Sales trend	rate & direction of changes in sales volume
Unit sales	number of units shipped
Profitability	distributor's price less variable cost
Gross margin trend....	rate and direction of change in contribution to fixed costs and profit
Costs cf. competition.	total costs of production and marketing

Group 2

Market share	product sales as a % of industry sales in a product category
Market growth rate ...	projection of industry sales trend
Price trend	rate and direction of changes in price
Service policy	compliance with warranties or guarantees after purchase
Saturation level	% of possible users currently possessing product
Competitive action....	pricing, promotional, technological moves of the competition
Consumer awareness ...	level of consumer identification with brand

Group 3

Product line policy ..	intention of offering a full line
Company image	position of the firm in the industry or society in general
Variable cost trend ..	rate and direction of changes in variable cost
Compatibility of distribution	distribution similarities with other products of the firm
Substitute products ..	other models which might serve as an alternative to the buyer
Product interaction ..	influence of this model on other products (positive or negative)

Group 4

Executive time requirements	amount of executive time spent on marketing the product
Emotional involvement	personal preferences of management
New product potential	use of resources released by deletion
Modification potential	changes to product resulting in new catalogue number
Organised intervention	action of government, consumer groups, testing agencies

These 4 groups cover the first two objectives of the study. An examination of the interaction among these variables revealed a number of clusters:

- a) The Sales Cluster - dollar sales, unit sales, saturation level, saturation, company image
- b) The Trend Cluster - price trend, product effectiveness, gross margin trend, variable cost trend, sales trend, substitution of products
- c) The Profitability Cluster - profitability, product interaction, compatibility of distribution, modification potential, new product potential
- d) The Market Cluster - market growth rate, competitive action, executive time requirements, cost compared to competition
- e) Market Impact Cluster - market share, consumer awareness

- f) Pressure Cluster - Channel reaction, organised intervention
- g) Administrative Cluster - Product line policy, emotional involvement

Additional findings of the research are that, the product elimination process is neither systematised, nor initiated on any regular basis. While the decision-making unit varies from company to company, it was also seen to change depending on the expected impact of the deletion on the company.

The overall value of this study is that it agrees with many descriptive studies that the product elimination process is in reality far removed from the tidy procedures prescribed in the theoretical literature. The work raises two issues which are not developed, but which are of great potential interest to the researcher. The first concerns the contention that there are four basic situations under which a product might be evaluated for possible elimination, as opposed to the solitary "poor product performance". The second concerns the changing complexion of the DMU, indicating that there may well be influences on the decision inherent in the nature of that specific decision. Specifically, they are those factors which deal with the expected impact of the decision on the entire company.

However, aspects of the work remain somewhat uninspiring. The purpose of developing clusters is far from clear, especially as variables drawn together as being of similar importance might not be directly comparable if they were related to their respective stages in the decision. The tentative observation could be made that, compared to the decision-variables presented by other authors, each of the four sets of variables does seem to describe loosely each of the decision-stages, with Group 1 containing many recognition variables and Groups 3 and 4 containing some evaluation factors. However, without further investigation, such an observation remains at the level of conjecture.

3.4.18 Worthing (1975)

Worthing developed a computer-based model and tested it quite successfully in an American company. It is essentially a two-phased procedure.

The first phase - Programme Screen - is the procedure for identifying products which need closer evaluation. The factors used for this identification are

- a) comparison of current and past year's ROI
- b) profitability
- c) sales volume.

The second phase is the procedure for further analysing performance and is more complex. Worthing has identified three major sets of indicators of the product's health: marketing, financial, managerial indicators. Each of these comprises five indicator scales which are weighted in line with the importance management accords to the indicator. The indicator scales are as follows:-

Financial	1)	Contribution Margin Trend	(Past 3 years)
	2)	Profitability Trend	(")
	3)	Sales Volume Trend	(")
	4)	Price Level Trend	(")
	5)	Price vis a vis potential use of funds	
Marketing	1)	Projected Market Growth Rate (Next 3 years)	
	2)	Market Share Trend	(Past 3 years)
	3)	Product Line Complementary Factor	
	4)	Competitive Distinctiveness	
	5)	Customer Loyalty	
Managerial	1)	Marketing/Sales Personnel Response	
	2)	Distribution/Dealers Reaction	
	3)	Machinery/Facilities Utilisation	
	4)	Production Personnel Response	
	5)	Present Vs Potential Use of Manpower	

Each of the 15 indicator scales is rated from 1 (poor) to 5 (excellent). The most important scales are given a weighted value of 10, the least important, 2. When all the scores are multiplied the weights, Worthing suggests a cut-off point of 300, below which a product should not be retained.

The author does not separate variables according to the stage in the decision where they are most relevant. His model amounts to a very elaborate weak product identification model, although some factors more relevant to the evaluation stage are incorporated. The model attempts to incorporate all elements of product elimination decision-making into one melting pot. Worthing also highlights the need for contribution accounting, as there is no true way of allocating fixed costs. Also emphasised is the need to improve the 'soft' or qualitative data which is used to evaluate the fate of an elimination candidate.

The main attraction of Worthing's model is its comprehensive simplicity, and theoretically it is no less sound than many of the more complex models.

3.4.19 Hise & McGinnis (1975)

From a sample of America's 500 largest companies, the authors received 96 responses. The questionnaire was filled in by the VP-Marketing. The questionnaire's three segments corresponded to its three primary objectives:

- 1) To discover general behaviour regarding product elimination; specifically investigated were formality, the extent of computerisation, the existence of a replacement parts policy, steps of the elimination process, the frequency of considering products for deletion, frequency of actually deleting products.
- 2) To investigate a specific deletion decision which highlights the precise reasons for dropping the product and the alternatives to elimination which were considered.
- 3) To discover the ethical and legal complications of deleting products from the range.

Formality was measured by investigating whether the elimination procedure was written and whether responsibility was specifically assigned. Ethical responsibility was measured by investigating whether there is a replacement parts policy, whether parts are available for the expected life of the most recently eliminated product, whether customers were notified in advance of the most recent deletion and whether the firm ever experienced opposition to a deletion, whether substitutes are marketed. In addition, "attitudes" to ethical implications were measured using a Likert-type attitude scale, and by ranking a selection of factors relevant to the elimination decision, half of these were profit-oriented, and half were concerned with the ethics.

The main findings can be summarised as follows:-

- 1) All firms claimed to have some product elimination programmes with "some degree of formality" but only one third of firms had their procedures committed to paper. Only 14 per cent of firms made use of the computer.
- 2) The steps involved in the product elimination process are:
 - (i) a yearly review of specific products which are considered for elimination;
 - (ii) determination of inventory levels;
 - (iii) consideration of remedial action and a profitability analysis of the deletion candidates.

Table 3.9 shows the list of possible corrective actions presented by these authors.

- 3) Responsibility for the elimination process was assigned in 60 of the companies, mostly to product managers, although in some cases to corporate planning and control or marketing personnel.

- 4) 47 per cent of the companies had eliminated five or fewer products in the previous five years, while around 25 per cent had dropped more than 25. 14 per cent of all products dropped were, in fact, new product failures. Most products accounted for less than 1 per cent of total sales volume, suggesting they were not particularly important.

Table 3.9 Alternatives to Product Abandonment

Alternative	% of Firms Indicating Alternative
Modifications in product or product improvement	61
Increase in product's price	49
Increased effort by sales force	44
Increased promotional expenditures	35
Decrease in product's price	30
Additional market research	14
Decreased promotional expenditures	11
Changed channels of distribution	9
Decreased effort by sales force	7

Source: Hise, R T, & McGinnis, M A (1975) "Product Elimination: Practices Policies and Ethics", Business Horizons, June.

The reasons for deciding to drop the particular products are given below:-

Table 3.10 Reasons for Proceeding with Elimination

Reasons	% of Firms Indicating Reason
Expected future sales volume appeared poor	68
Return on investment below a minimum acceptable level	56
Past sales volume declining	48
Past sales volume not up to expectation	48
Future market potential for products of this type in general not favourable	54
Costs exceeded revenues	29
Market share declining	25
Excessive amount of executive time required for product	11
Constant price reductions required in effort to increase sales	9
Technical malfunctioning of product or improper functioning	8
Introduction of superior product by competition	6
Increasingly larger promotion and advertising budget required	0

Source: Hise, R T, & McGuinnis, M A (1975) "Product
Elimination: Practices Policies and Ethics," Business
Horizons, June.

5) The findings regarding the critical implications are by far
the most interesting.

- (i) Most companies consider their trading customers
to be more important than consumers.
- (ii) Most companies have no replacement parts policy,
and over a third of companies did not notify their
trading customers in advance of the most recent
elimination.
- (iii) While over half the companies had experienced
customer opposition to a decision to drop, over 70
per cent of them reported that it did not affect the
decision.

- (iv) Where the product experienced a technical malfunction it was nearly always deleted. This aspect of elimination is nowhere else discussed in the literature.

Certainly, Hise and McGinnis raise important issues not to be found elsewhere. In addition, their results add weight to the body of knowledge suggesting the gulf between theory and practice in the area of elimination. However, their lack of precision in defining the scope and nature of the decision-making process leaves some of the results rather confused. For example, in attempting to discover how often reviews are carried out, they confuse a general review which might isolate products with a review of specific products whose performance is dubious. The distinction here is not made clear and one must infer from other findings that respondents have answered with the latter scenario in mind. Such findings as "review is usually on a yearly basis" and "review followed by a determination of inventory levels" tend to suggest that the review being reported is of products which have already been identified as poor performers.

The quality of the findings would also have been enhanced had the authors attempted to correlate the "reasons for dropping" with the type of remedial action considered. This might have been a start for developing patterns of product elimination behaviour.

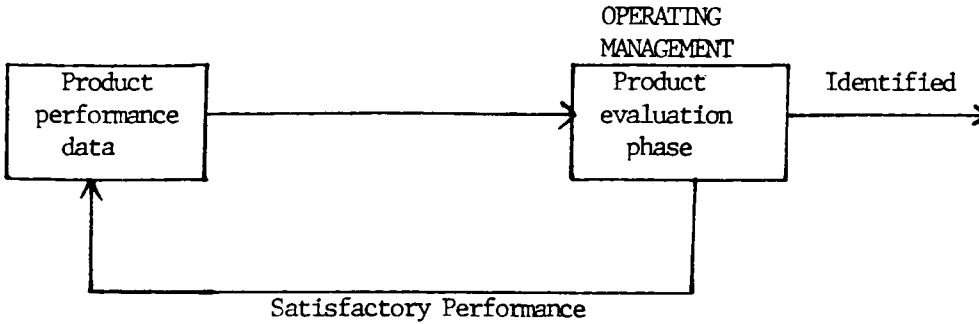
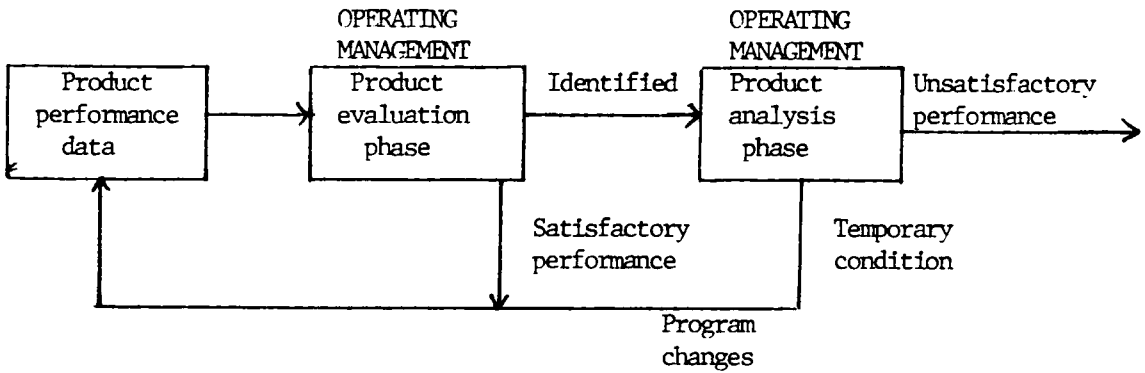
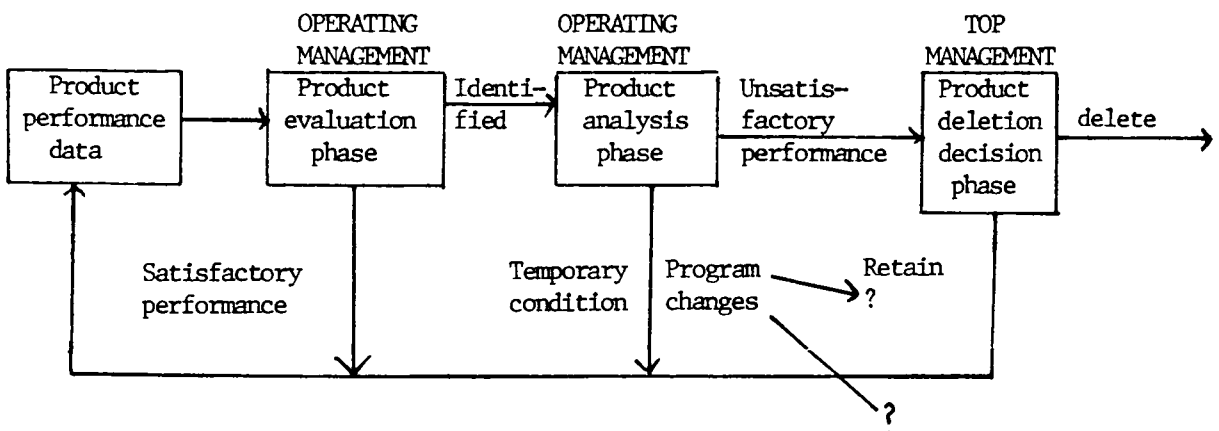
While the results of the study bring empirical knowledge to areas of product elimination about which relatively little was known, the authors failed to indicate if there were differences in consumer goods and industrial goods companies.

3.4.20 Browne and Kemp (1976)

In this article the authors develop a procedure for reviewing products and selecting elimination candidates, analysing these elimination candidates and actually deciding the product's fate. The authors are among the minority who suggest the need for

adaptation of the model to "their particular needs" as well as the need for a top management policy statement outlining company objectives regarding product line maintenance. The procedure suggested has three phases. The first phase (see Figure 3.11) attempts to identify dubious products. All the firms products are subjected to monitoring against the following criteria: sales volume, return on investment, raw materials cost and availability, average order size, rate of market penetration, product's response to promotion, and the number of sales calls required per sale. Clearly these data attempt to highlight the product's profitability - how much money it generates, against how much money it spends. In measuring profitability, the authors advocate the use of contribution or marginal costing, whereby directly assignable revenues are related to directly assignable costs. This approach is seen as a trade-off between completeness and reliability of the profitability measure. The data should be analysed at regular intervals, yet management need not be involved.

The second phase, the analysis, examines the cause of the product's deviation from plan. The areas for investigation are the following: competitors' policies, economic trends, introduction of new technology, company promotion mix, production scheduling and related inventory, the physical product or the complementary services. At this stage, heavier managerial input is required, and any product, having once fallen into this category is received more often than the rest. (see Figure 3.12) The basic objective of this analysis is to determine whether the observed weaknesses are temporary, or whether they herald the product's final decline.

Figure 3.11 The Product Evaluation PhaseFigure 3.12 The Product Analysis PhaseFigure 3.13 The Production Deletion Decision Phase

Source: Browne, W G and Kemp, P S (1976) "A Three-Stage Product Review Process", Industrial Marketing Management, 5.

The deletion stage attempts to examine the impact of dropping the product on the entire product line, and on the company in general. Only products which do not meet the standards set out in the initial policy statement are subjected to this phase (Figure 3.13). While the first two stages which are analytical need only historical data, assessing the impact of deleting is more predictive and therefore requires forecast data, specific to each product involved in the decision phase. The explicit attention of top management is required at this stage, especially to evaluate the more qualitative factors such as the impact of deletion on company image and employee relationships. Included in this phase of the Browne and Kemp model are also the amount of stock carried for the products the status of replacement parts and customer relations.

While the work of Browne and Kemp lacks the sophistication of earlier review and decision models, it does add the important dimension of managerial involvement and it is quite explicit in outlining the need for the higher managerial echelons to be involved at the more risky stages in the decision. Equally important and emphasised is the idea of a company policy which can guide decision-making in this area. While the authors introduce some novel decision-variables, for example, using problems associated with raw materials and parts to identify dubious products, some others that they suggest are rather detailed and difficult to measure on the regular, computerised basis they recommend (eg. rate of market penetration, response to promotional activities). The article also outlines an explicit diagnosis routine, but there is no real description of the factors used nor any operationalisation of them. What might have been a corollary to a diagnosis routine - consideration of methods of revitalisation - is completely omitted from the model.

3.4.21 Kratchman, Hise and Ulrich (1976)

This paper focuses on the need to develop basic accounting data into warning signals. A suggested list of warning signals includes: declining absolute sales volume, sales volume decreasing as a percentage of the firms total sales, decreasing market share, past sales volume not up to projected amounts, future market potential for products of this type not favourable, return on investment is below minimally acceptable level, variable costs in excess of revenue, costs as a percentage of sales consistently increasing, increasing amount of executive time required by the product, price needs to be constantly lowered to maintain sales, promotional budgets need to be consistently increased to maintain sales. These warning signals are given the emphasis commensurate with the company's major objectives. However as simple warning signals they are inadequate, and the authors discuss four operational aspects of their use:

- 1) "Standards" should be developed from the warning signals. Such standards must be quantified so that cut-off points may be established to determine whether a product is performing poorly.
- 2) To facilitate the identification of poor performers, these devolved standards should be computerised, allowing management by exception to be established. The authors argue that without computerisation management will not discover the problem until 6 or 12 months later when the product is ordinarily reviewed. This assumption is based on the findings of one of the authors one year previously (Hise and McGinnis, 1975), the weaknesses of which have already been examined (see paragraph 3.4.19).
- 3) Management has to consider which warning signals should receive greatest attention. The authors argue that it is incumbent upon accounting staff to underline those warning signals most directly related to profitability and that these should be given priority over market issues. The rationale behind this statement is unclear.

- 4) The nature of the warning signal can also indicate what needs to be done to revitalise the product, as well as what can be done.

While this article lays out an adequate list of factors which might be used to identify weak products, it adds little to the body of literature that proceeds it. Written from an accountancy and marketing perspective only, the major criticism that can be levelled is the assumption of the breadth and complexity of data that exists in the company and the disregard for any other function which may be involved.

3.4.22 Evans (1977)

This study reports on an attempt to discover why a product-line in a medium-sized manufacturer of electronic parts was not profitable. Although an important phase in the product elimination process, many writers limit the diagnosis to an investigation of costs, price competitive activity and proceed to examine what might be done to revitalise the product. Comparatively few writers have investigated the diagnosis of the cause of poor product performance. Evans' work is limited to the precise task of finding out why a particular product failed.

This he did by mailing 160 questionnaires to the sales force. As the sales force sold the product to the dealers, the third person projective technique was used to assess the dealers' opinions about the product. A list of variables deemed to influence demand was developed by surveying management. These are given below in order of importance: competitive retail value, product styles, performance/price ratio, features/price ratio, width of advertising of the product, the amount of variety of the product, warranties, variety of systems offered, quality of service, availability of the product. A variety of statistical techniques applied (multiple regression, discriminant analysis) to the data showed that the variables most likely to influence overall product preference in this case were 1) competitive retail value, and 2) service policy.

The value of this specific piece of research was that two major product weaknesses were highlighted, furnishing a base for deciding future action. While the results themselves cannot be generalised, at least the value of incorporating soft data into some stages of product elimination decision-making is underlined. However, one factor was missing from the list of variables thought to influence demand: the performance of the salesman.

3.4.23 Avlonitis (1980)

The comprehensive piece of empirical research carried out by Avlonitis has formed a cohesive body of knowledge regarding the way in which the product elimination decision is handled in some sectors of industry. The findings summarised here are widely disseminated through a number of marketing and management journals (eg European Journal of Marketing 1982, Industrial Marketing Management 1983, 1984 and Journal of Marketing 1985).

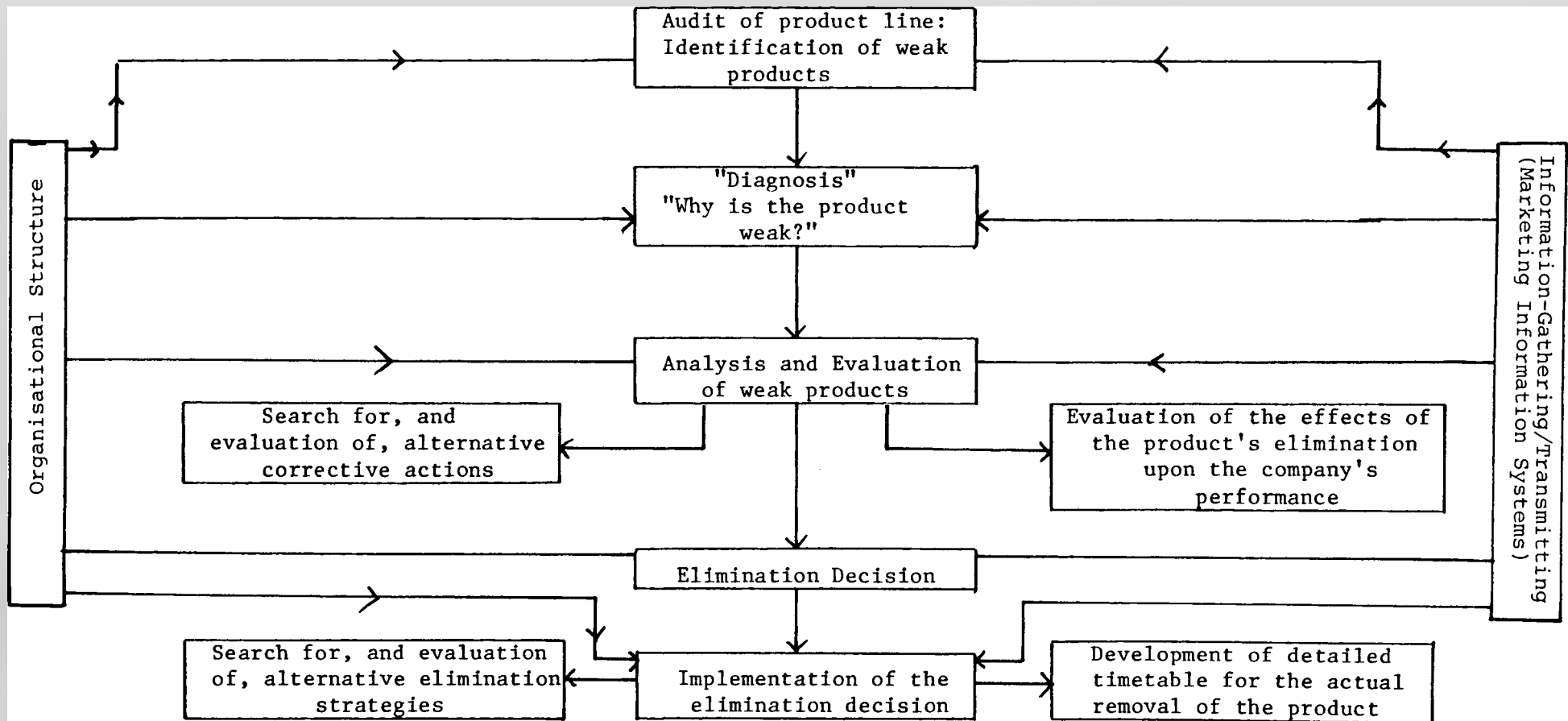
The objectives of the study were:

- 1) To analyse the problem situations which trigger the elimination process.
- 2) To describe comprehensively company behaviour at each stage of the process.
- 3) To examine the effects of certain contextual variables on the process and on the problem situations. These are presented above, paragraph 3.4.4.
- 4) To identify factors which interrupt the process and cause delay.

To guide this investigation, Avlonitis developed a conceptual framework, which is reproduced in Figure 3.14.

Figure 3.14

A Conceptual Framework of the Rational Elements of the Product Elimination Decision



Source: Avlonitis, G J (1980), An Exploratory Investigation of the Product Elimination Decision-Making Process in the UK Engineering Industry, Unpublished PhD Thesis, University of Strathclyde

The methodology of the study was consistent with the demands of exploration and involved a pilot study and personal interviews to gain insight and knowledge and to develop hypotheses, and a mail survey to test the hypotheses. For all the stages of the study, the sample was drawn from major sectors of the British Engineering industry and was stratified by company size. Small companies (100 - 499 employees) medium-sized companies (500 - 999 employees) and large companies (over 1000 employees) were contacted. The response rates were 57 per cent for the interview survey and 31 per cent for the mail survey. In both, top management divulged information.

For the interview stage, two loosely-structured schedules were used: the first evoked descriptions of product elimination behaviour in general; the second concentrated on a specific deletion. The mail survey stage used a self-administered questionnaire. One criticism that can be made of this methodology is that the accounts given of company behaviour regarding the elimination process risk being less than accurate due to deliberate distortion, error or plain memory failure. All surveys run this risk. In this specific case the problem was intensified by having only one respondent in each company. On the other hand, using two slightly different interview schedules, which serve as a cross-check can often help alleviate the problem.

During the mail survey stage, two distinct sets of variables were measured: independent variables, including product diversity, operations technology, technological change and market competition; and dependent variables, including the decision variables, numbers of products dropped. The independent variables were measured using relatively well-developed and recognised techniques (eg. Likert-type). With regard to the dependent variable "number of products dropped" it is a pity that this was not related to the overall length of the product-mix, and expressed as a proportion of this. In addition, the duration of the decision-making process was

measured somewhat imprecisely, because the beginning of that process is neither conceptualised nor operationalised. It is vital to remember also that these findings are derived from a study of the industrial market, and as such they need to be tested in the consumer market.

The major findings of the research are summarised below.

- 1) Eight problem situations trigger the elimination decision, and are presented in Table 3.11, which also shows their relative importance. Some contextual variables were seen to influence the occurrence of certain problem situations (see Table 3.12).

Table 3.11 Relative Importance of Problem Situations Evoking the Elimination Decision

Problem Situations	Frequency Distribution of Points Allocated					Mean Deviation
	Pts 0-20	21-40	41-60	Over 60		
1 Government Policies and Regulations	89*	2	1	-	2.0	7.8
2 Changes in the Third Party Specifications	85	4	2	1	3.6	11.0
3 Parent Organisation Decisions & Policies	87	3	1	1	3.0	11.0
4 Decline in Market Potential	52	23	8	9	26.1	17.8
5 Poor Product Performance	63	14	11	4	16.6	22.9
6 Development of a New Product	44	24	25	9	28.8	25.8
7 Rationalisation due to Mergers & Acquisitions	87	2	4	-	3.6	10.3
8 Development of a Variety Reduction Policy	62	16	8	6	16.3	23.8

Source: Avlonitis, G J (1980), An Exploratory Investigation of the Product Elimination Decision-Making Process in the UK Engineering Industry, Unpublished PhD Thesis, University of Strathclyde

* To be read: In 89 companies the "Government Policies and Regulations" problem situation was allocated points ranging from 0 to 20 (on a scale running from 0 to 100) on the basis of the percentage of dropped products that it accounted for.

Table 3.12 Spearman Rank-Order Correlation Coefficients of the Importance of Various Problem Situations with Contextual Variables N = 92

Problem Situations	Size	Contextual Variables			
		Product Diversity	Operations Technology	Technological Change	Market Competition
Development of a New Product	-.07	-.13	-.01	.31 ^a	.02
Poor Product Performance	.12	-.05	-.06	.10	-.21 ^b
Decline in Market Potential	-.23 ^b	-.07	-.11	-.06	-.23 ^b
Development of a Variety Reduction Policy	.05	.19 ^b	.16 ^c	-.17 ^c	.18 ^b

a = Significant at the 1 percent level

b = Significant at the 5 percent level

c = Significant at the 10 percent level.

Source: Adapted from Avlonitis, G J (1980) An Exploratory Investigation of the Product Elimination Decision-Making Process in the UK Engineering Industry, Unpublished PhD Thesis, University of Strathclyde.

- 2) Having shown that not all eliminated products are weak, Avlonitis then went on to focus attention on the case of weak products. He discovered nine "criteria" or "factors" used to identify weak products, listed in Table 3.13. The influence of contextual variables on the recognition factors is also presented. Avlonitis did not investigate the relationship between problem situations and recognition factors, which is regrettable, as it is intuitively attractive to assume that a complex relationship exists, given that products deleted due to poor product performance might well be detected using one or more of the factors listed in Table 3.13. These factors may well be less relevant where a product is dropped due to third party specification.

Two broad modes of identification of weak products were discovered: management cycle activities and planning cycle activities. The former includes board meetings, managerial meetings and sales meetings which are regular (a minimum of three times a year) and convene to examine the general health of the company, which necessitates identification for "poor performers". The latter include development committee meetings, new product meetings, marketing meetings, range review meetings. These meetings tended to be less frequent than management cycle activities and seemed more concerned with evaluation of performance against predetermined targets.

- 3) The diagnoses of weak products and the methods adopted to revitalise them are two distinct, yet interrelated concepts. Concerning the former, Avlonitis found that, on recognising the failing performance of a product, management can combine experience and knowledge to trace the source of deviation to one of the following seven factors: production methods, the product's cost structure, the product's design, competitive activity, customer requirements, the product's market price

and the product's market share. The diagnosis routine is shown to be subjective and based on managerial expense rather than a computer analysis. The sources of deviation pinpointed, management can locate the precise cause of deviation, which usually boiled down to one of the following: uncompetitive price, production problems, uneconomic batch sizes, too costly to produce and market, high costs to manufacture, over-engineered product, competitors domination of the market, customer requirements not as expected, low selling price. The important finding here is that the "theoretically acceptable" ways of analysing weak products, such as value analysis, is accompanied by heavy reliance on past experience, information collected over a long period of time and company folklore. However, this diagnostic step is not vital to all deletion decisions. Where poor product performance triggered the process, diagnosis was a feature, in other instances, for example where there was the development of a new product, or an active variety reduction programme, the diagnosis did not feature, which seems logical.

Eight methods of revitalisation were identified and are listed, along with the contextual variables affecting them, in Table 3.14.

Again the findings dispute the normative view of how corrective measures might be evaluated. Choosing among alternative corrective action tended to be a matter of qualitative judgement regarding the consequences of implementing a given corrective action.

Interestingly, certain product-specific variables were seen to influence the adoption of certain kinds of corrective action. Specifically, the age of the product, or the product's position on the life cycle curve, seemed to influence the amount of effort put into revitalising the

products. In the early stages of the PLC more corrective actions are taken, the young product receiving more attention than than an old one.

- 4) Evaluating the total situation and coming to a decision in the light of all the factors is one of the decision stages less-well defined in the bulk of the normative literature. In practice, Avlonitis found that a number of unspecified criteria are qualitatively considered. These criteria are reported in Table 3.15, and are largely to do with assessing the impact of deleting the product on the firm. Again the initial problem situation which triggered the decision process is very influential. For example, where a new product had been developed to replace the old, evaluation concentrated on the amount of resources committed to it and when these might be reallocated. In addition, the "importance" of the product, measured by the sales volume and resources it accounts for, influenced the evaluation stage. As might be expected, the less the importance, the more straightforward the evaluation. Indeed both the problem situation and the product's importance, which seem to determine the nature, scope and intensity of the evaluation process, ought to be systematically examined with reference to their effect on the whole product elimination process. This would seem a fundamental and fecund area for research.
- 5) The withdrawal strategies employed by companies and the factors influencing the choice of strategy, were thoroughly researched by Avlonitis. These are listed in Tables 3.16 and 3.17 respectively. Overall, the most used strategies were "phase out slowly" and "drop from the standard range, reintroduce as a special" and the most important determinant of strategy choice was the amount of stock, finished or unfinished which had to be disposed of. In addition to the influence of contextual ariables, the choice of strategy is also subject to the influence of the problem situation which triggered the elimination decision.

Table 3.13 Means, Standard Deviations and Zero-Order Correlations of Weak Product Identification Criteria with Contextual Variables N = 94

Weak Product Identification Criteria	Mean	Standard Deviation	Contextual Variables				
			Size	Product Diversity	Operations Technology	Technological Change	Market Competition
Past Sales Volume	3.5	1.2	.08	.07	-.10	.05	.06
Market Share	2.6	1.2	.21 ^b	.09	.16 ^c	-.05	.01
Profitability	4.2	0.8	-.01	.01	-.04	-.06	.11
Future Sales Volume	3.9	1.0	.06	.02	-.05	-.01	.15 ^c
Share of Company's Sales	2.8	1.1	.04	.07	.05	-.03	.28 ^a
Market Growth Rate	2.7	1.2	.24 ^a	.22 ^b	.07	.02	.03
Competitive Activities	3.0	1.1	.15 ^c	.19 ^b	-.06	-.04	.19 ^b
Operational Problems (Production, Marketing, etc)	3.0	1.0	-.04	-.01	-.14 ^c	-.15 ^c	.15 ^c
Product's Position on the Life Cycle Curve	2.8	1.3	.03	.02	-.01	.14 ^c	.01

a = Significant of the 1 percent level.

b = Significant of the 5 percent level.

c = Significant of the 10 percent level.

Source: Avlonitis, G J (1986) "The Identification of Weak Industrial Products", European Journal of Marketing, 20 (10).

Table 3.14 Means, Standard Deviations and Zero-Order Correlations of Alternative Corrective Actions with Contextual Variables N = 93*

Corrective Actions	Mean	Standard Deviation	Contextual Variables				
			Size	Product Diversity	Operations Technology	Technological Change	Market Competition
Product Modifications and Improvement	3.7	1.1	-.10	-.01	-.03	.09	.13
Increase in Product's Price	3.1	1.1	-.09	-.12	.04	-.14 ^c	.03
Increased Effort by the Sales Force	2.9	1.2	.18 ^b	.18 ^b	.04	-.15 ^c	.06
Increased Promotional Expenditure	2.2	1.0	.12	.09	.13	-.07	.05
Changed Channels of Distribution	1.8	1.0	.09	.05	.09	.03	.10
Decrease in Product's Price	2.0	1.2	.18 ^b	.02	-.14 ^c	-.04	.25 ^a
Decreased Promotional Expenditure	1.6	0.8	.33 ^a	.11	.05	-.15 ^c	.21 ^b
Development of New Markets/Applications	3.0	1.2	.01	.09	.11	-.09	.19 ^b

* One mail survey respondent did not respond to this particular inquiry.

a = Significant of the 1 percent level.

b = Significant of the 5 percent level.

c = Significant of the 10 percent level.

Source: Avlonitis, G J (1985) "Revitalising Weak Industrial Products", Industrial Marketing Management, 14, May.

Table 3.15 Means, Standard Deviations and Zero-Order Correlations of Evaluation Factors with Contextual Variables N = 94

Evaluation Factors	Mean	Standard Deviation	Contextual Variables				
			Size	Product Diversity	Operations Technology	Technological Change	Market Competition
Product Elimination's Effect on:							
1 "Full-line" Policy	3.3	1.1	.11	.16 ^c	.23 ^b	-.11	.11
2 Corporate Image	2.5	1.2	.10	.21 ^b	.19 ^b	-.02	.07
3 Sales of Other Products	3.7	1.0	.08	.20 ^b	.00	.08 ^b	.28 ^a
4 Customer Relationships	3.7	1.1	.07	.15 ^c	.08	.21 ^b	.18 ^b
5 Profitability of other Products via Production Overheads Allocation	3.6	1.1	-.03	.00	-.01	.11	.13
6 Profitability of other Products via Selling Overheads Allocation	3.1	1.2	.05	.09	-.01	.04	.18 ^b
7 Profitability of other Products via Distribution Overheads Allocation	2.4	1.1	.02	.07	.19 ^b	.02	.23 ^b
8 Fixed and Working Capital	3.1	1.3	-.02	.01	.07	.07 ^b	.15 ^c
9 Employee Relationships	2.3	1.2	.14 ^c	.02	.02	-.19 ^b	.27 ^a
New Product Potential	3.9	0.9	-.08	-.01	-.08	.21 ^b	.19 ^b
Reallocation of Resources	3.5	1.2	.04 ^b	.01	-.04	.09	.34 ^a
Release of Executive Time	3.2	1.3	.19 ^b	.01	.07 ^b	-.02	.05 ^b
Existence of Substitutes	3.2	1.3	.05	.10 ^b	.17 ^b	.00	.21 ^b
Competitive Moves	2.5	1.3	.06 ^b	.19 ^b	.22 ^b	-.02	.13
Organised Intervention	1.9	1.0	.18 ^b	.03	.03	-.02	.11

a = Significant of the 1 percent level.

b = Significant of the 5 percent level.

c = Significant of the 10 percent level.

Source: Avlonitis, G J (1984) "Industrial Product Elimination: Major Factors to Consider", Industrial Marketing Management, 13, May.

Table 3.16 Means, Standard Deviations and Zero-Order Correlations of Factors Influencing Phase-out Timing
with Contextual Variables N = 94

Influencing Factors	Mean	Standard Deviation	Contextual Variables				
			Size	Product Diversity	Operations Technology	Technological Change	Market Competition
Market Trends/Holdover Demand	3.7	1.2	.05	-.02	.06	-.11	-.02
Stock on Hand	3.9	0.8	-.09	.03	-.05	.16 ^c	.17 ^b
Status of Replacement Parts	3.3	1.1	-.01	.08	.03	.14 ^c	.09
Effect on Customers	3.2	1.3	.03	.21 ^b	.24 ^a	.00	.18 ^b
Replacement Product Development	3.8	1.0	-.14 ^c	-.05	-.02	.28 ^a	.18 ^b

a = Significant of the 1 percent level.

b = Significant of the 5 percent level.

c = Significant of the 10 percent level.

Source: Avlonitis, G J (1983) "The Product Elimination Decision
and Strategies," Industrial Marketing Management, 12,
February.

Table 3.17 Means, Standard Deviations and Zero-Order Correlations of Alternative Elimination Strategies with Contextual Variables N = 94

Elimination Strategy	Mean	Standard Deviation	Contextual Variables				
			Size	Product Diversity	Operations Technology	Technological Change	Market Competition
Phase out Immediately	25	26	.10	.03	.08	-.06	-.07
Phase out Slowly	39	26	-.02	.15 ^c	-.03	.19 ^b	.06
Sell Out	6	10	.12	-.15 ^c	.05	-.10	.02
Drop from the Standard Range, Reintroduce as a Special	30	21	-.16 ^c	-.13	.09	-.11	.01

a = Significant of the 1 percent level.

b = Significant of the 5 percent level.

c = Significant of the 10 percent level.

Source: Avlonitis, G J (1983) "The Product Elimination Decision and Strategies", Industrial Marketing Management, 12, February.

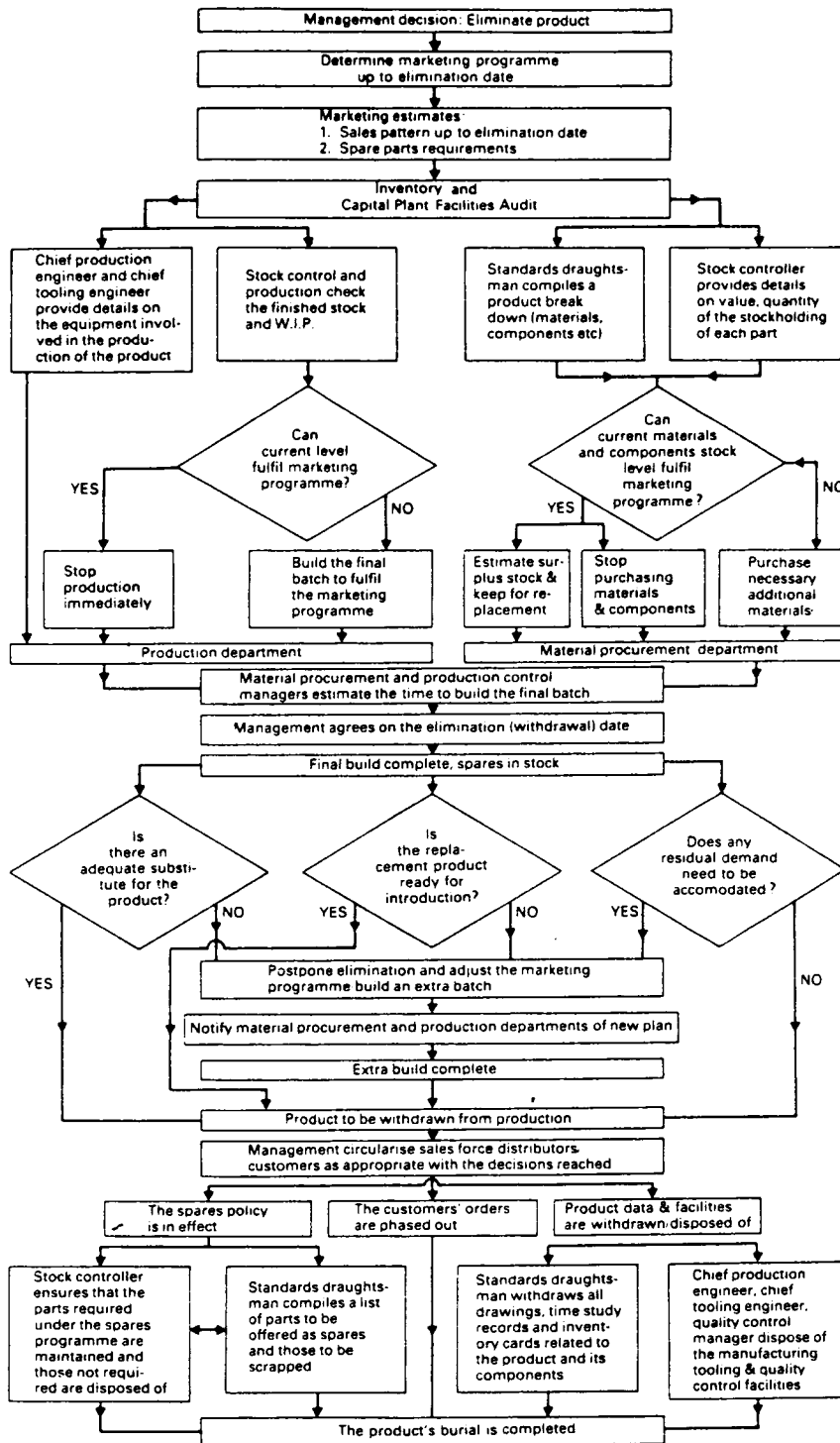
Notwithstanding the comments in the methodology section above, the timing of the decision is summarised in Table 3.18.

Avlonitis developed, from the findings of his interviews, a comprehensive decision model reproduced in Figure 3.15.

- 6) The penultimate aspect of the decision to be reviewed here is the ethical aspect. Most companies had a replacement parts policy, but few had it expressed in writing. While early notification of discontinuance was given to customers, few companies actually contacted their customers before making the decision. While most companies had experienced opposition to their decision to drop a product, this did not appear to postpone or prevent their decision to eliminate. Generally, Avlonitis' findings support those of Hise and McGinnis (1975).
- 7) The formality of the decision is a multidimensional variable. Measured in terms of the degree of systematic behaviour, written documents and assigned responsibilities related to the product elimination function, formality is at once a variable dependent upon contextual influences, as shown in Table 3.19, and an independent variable. Companies that were large, that had a diverse product range and had a mass output orientation seemed to conduct a more formal elimination process. But also, the decision's formality influences the importance of the decision variables used in making and complementing the decision.

The above discussion has attempted, somewhat cursorily to summarise the knowledge and insight that Avlonitis comprehensive research has brought. For a full discussion of the issues raised, the reader is referred to the publications listed in the references to this Chapter. Given the scope of the study, it seems churlish to point out omissions, but this is necessary, if our knowledge is to be advanced. Apart from the shortcomings of the methodology, several general comments must be made. Firstly, as the study is limited to the engineering sector, all the findings have to be confirmed or infirmed in other manufacturing sectors.

Figure 3.15: A Sequential Flow Diagram For The Implementation Of The Product-Elimination Decision



Source: Avlonitis G J (1983) "The Product Elimination Decision and Strategies", Industrial Marketing Management, 12, February.

Table 3.18 Time Between Recognition and Final Decision

Period of time	Number of Products	% of Products
6 months or less	29	26
7-12 months	38	33
13-18 months	12	10
19-24 months	25	22
25-30 months	2	2
31-36 months	2	2
Over 36 months	5	5
TOTAL	114	100

Source: Avlonitis, G J (1983) "Improving Product Elimination In Engineering Companies", Journal of General Management,

Table 3.19 The Influence of Contextual Variables on the Formality of the Product Elimination Decision

Formality Variables		<u>Organizational Variables</u>			<u>Environmental Variables</u>					R ² (Adjust)			F (7.85)
		Size	Product Diver- sity	Organi- Tech- nology	Market Diver- sity	Techno- logical Change	Product Compe- tition	Price Compe- tition	Overall Compe- tition ^b				
Overall formalization	simple r	.31 ^c	.56 ^c	.32 ^c	-.03	-.01	.12	-.16	.05				7.22
	beta weight	.08	.48	.17	-.04	-.04	.09	-.10	-	.61	.37	.33	(p<.01)
	(t)	(.71)	(5.06) ^c	(2.00) ^d	(.49)	(.54)	(1.07)	(1.10)	-				
Assignment of responsibilities	simple r	.24 ^d	.41 ^c	.21 ^d	-.14	.03	.05	-.25 ^b	-.04				3.89
	beta weight	.04	.34	.12	.12	.02	-.08	-.26 ^b	-	.47	.22	.17	(p<.01)
	(t)	(.42)	(3.90) ^c	(1.21)	(1.27)	(.24)	(.59)	(2.20) ^b	-				
Documentation	simple r	.16	.33 ^c	.28	.10	.06	-.02	-.01	.02				3.22
	beta weight	.05	.30	.25	.09	.08	-.06	.12	-	.42	.18	.12	(p<.01)
	(t)	(.52)	(2.94) ^c	(2.26) ^d	(.98)	(.83)	(.57)	(1.14)	-				
Systematic behaviour	simple r	.26 ^d	.31 ^c	.12	.08	.01	.22 ^d	.09	.24 ^d				2.37
	beta weight	.19	.20	.06	.09	-.05	.17	-.03	-	.37	.14	.08	(p<.05)
	(t)	(2.01) ^d	(2.47) ^d	(.78)	(1.02)	(.70)	(1.69) ^e	(.50)	-				

^c Significant at the 1 per cent level

^d Significant at the 5 per cent level

^e Significant at the 10 per cent level.

Source: Avlonitis, G J (1985) "Product Elimination Decision-Making: Does Formality Matter?" Journal of Marketing 44, Spring.

Secondly, while the contextual factors' effect on the decision process is systematically investigated at every stage, the influence of product-specific variables is only mentioned in passing, and only with respect to one or two stages, and yet seems to influence the process strongly. Thirdly, although Avlonitis highlights eight problem situations which cause products to be dropped, the four stages of the decision-making process are approached from a poor product performance perspective. Fourthly, the contextual variables include organisational variables and techno-economic variables, but omit other key constructs found in the research of organisational behaviour, namely strategic choice factors and managerial factors. Fifthly, no distinction is made between complete elimination and replacement decisions, although where the subject is approached it would appear to be of some importance. However, in relation to the overall depth of the work such criticisms pale somewhat.

3.4.24 Hise, Parasuraman and Viswanathan (1984)

To our knowledge, this article is the most recent report of product elimination behaviour in the United States. The results are based on a mail survey involving 299 of the largest American industrial manufacturers. 1000 companies were contacted, all had sales volumes of at least \$100m and had numerous products. The objectives were to determine:

- 1 The extent to which product elimination programmes have been effectively established and implemented in respondent companies.
- 2 What factors distinguish companies with product elimination programmes from those without product elimination programmes.
- 3 What factors distinguish companies that have effectively established and implemented product elimination programmes from those whose elimination programmes have not been effectively established and implemented.

- 4 What factors distinguish companies with effective product elimination programmes from those without product elimination programmes.

Unfortunately in the article there are no definitions regarding the nature of a "product elimination programme". The measures used to assess the effectiveness of companies' product elimination efforts were, whether or not the firms made use of computers, or whether they had a written product elimination programme. The questionnaire was subdivided into three sections. Section One posed questions about the operations of the firms' product elimination programmes, including the number of products reviewed and dropped, who in the company is responsible, and so forth. Section Two investigated the company from a more general perspective, examining its Marketing department its marketing information systems, and the like. The third section studied the perceived benefits of having a product elimination programme. The questionnaire was not constructed using any overall conceptual framework, the strategy being to describe as fully as possible the product elimination behaviour of the company, and then to see what the distinguishing features are.

The salient findings can be subsumed as follows:

- 1) Only 40 per cent of the 299 respondent companies had a product elimination programme.
- 2) 43 per cent of the sample had deleted more than 100 products, but as many as 31 per cent had deleted fewer than 20. No time span is specified.
- 3) Of the firms claiming to have a product elimination programme, 69 per cent did not have written programmes, 79 per cent of those companies who did have programmes used a computer to aid the execution of the programme, by providing information about the following subjects: sales volume, profit and gross margins, inventory levels, cost analysis, forecasts, market share.

- 4) 79 per cent of the respondent companies indicated that their products were reviewed on an annual basis.
- 5) Virtually all the respondent companies assigned specific responsibility for their product elimination efforts. 56 per cent of those assigning responsibilities cited individuals, 44 per cent committees. The individuals most involved include: product managers, marketing managers and vice-presidents of marketing.
- 6) Tables 3.20-3.24 show the important distinguishing factors among companies with and without product elimination programmes, with and without written programmes, with and without computer programmes, and various other configurations of firms displaying these characteristics. While the data presented in these tables might be seen as an interesting contribution to the description of product elimination practice, the lack of precise definitions and techniques of measurement reduce the impact of the findings. The fundamental concept - the product elimination programme - is left unexplained while a second concept - effectiveness - is not described in full, nor is its theoretical basis justified. Written programmes cannot be said to be wholly indicative of effectiveness. In addition, the implications of some of the distinguishing factors are far from clear, a problem exacerbated by the fact that the reasons for some of the comparisons are neither obvious nor explained. In short, the most revealing finding is the fact that one third of 299 of the US largest companies have no elimination programmes whatsoever.

Table 3.20 Factors Differentiating Companies With Product Elimination Programs From Those Without

Factor	Companies with Product-Elimination Programs (N = 120)	Companies without Product-Elimination Programs (N = 179)
Percentage of firms that consider market share as important objective*	44%	28%
Percentage of firms that consider return on investment as important objective*	76%	57%
Average estimated percentage of products' sales resulting from other products' sales**	28%	20%
Average percentage of products that generate 80 percent of the firm's sales volume**	28%	32%
Percentage of firms with variable cost data available on products*	74%	58%
Percentage of firms with profit data available on products on annual basis*	78%	69%
Percentage of firms with periodic marketing audit**	53%	41%
Percentage of firms with marketing information system**	77%	66%
Average number of perceived benefits of product-elimination programs cited**	2.48	1.77

* Significant at the .01 level.

** Significant at the .05 level.

Source: Hise, R T, Parasuraman, A, and Viswanathan, R (1984)
 "Product Elimination: A Neglected Management
 Responsibility," Journal of Business Strategy, Spring.

Table 3.21 Factors Differentiating Companies Whose Product-Elimination Programs Used Computers From Those Whose Did Not

Factor	Companies that use Computers (N = 95)	Companies that Do Not use Computers (N = 25)
Average number of products produced and marketed*	3,903	5,135
Average number of products reviewed*	493	276
Average number of products eliminated*	293	108

* Significant at .05 level.

Table 3.22 Factors Differentiating Companies Whose Product-Elimination Programs Were In Writing From Those Companies Whose Were Not

Factor	Companies with Written Programs (N = 37)	Companies without written Programs (N = 83)
Average number of employees in marketing research department*	8.7	5.0
Average number of products eliminated*	345	206

* Significant at the .05 level.

Source: Hise, R T, Parasuraman, A, and Viswanathan, R (1984)
 "Product Elimination: A Neglected Management
 Responsibility," Journal of Business Strategy, Spring.

Table 3.23 Factors Differentiating Companies Whose Product-Elimination Programs Made Use Of the Computer from Those Companies Without Product-Elimination Programs

Factor	Companies With Computer Usage (N = 95)	Companies Without Product-Elimination Programs (N = 179)
Percentage of firms that consider market share as important objective	42%	28%
Percentage of firms that consider return on investment as important objective**	76%	56%
Average estimated percentage of products' sales resulting from other products' sales*	28%	20%
Percentage of firms with variable cost data available on products*	71%	58%
Percentage of firms with price figures available on products*	52%	39%
Percentage of firms with periodic marketing audit*	54%	41%
Percentage of firms with marketing information system*	77%	66%
Average number of perceived benefits of product-elimination program cited*	2.56	1.77

* Significant at the .05 level.

** Significant at the .01 level.

Source: Hise, R T, Parasuraman, A, and Viswanathan, R (1984)
 "Product Elimination: A Neglected Management
 Responsibility," Journal of Business Strategy, Spring.

Table 3.24 Factors Differentiating Companies Whose Product-Elimination Programs Were In Writing From Those Companies Without Product-Elimination Programs

Factor	Companies with Written Programs (N = 37)	Companies without Product-Elimination Programs (N = 179)
Percentage of firms that consider market share as important objective*	49%	28%
Average estimated percentage of products' sales resulting from other products' sales*	31%	20%
Percentage of firms with variable cost data available on products*	76%	58%
Percentage of firms with periodic marketing audit*	61%	41%
Average number of perceived benefits of product-elimination program cited	2.77	1.77

* Significant at the .05 level.

Source: Hise, R T, Parasuraman, A, and Viswanathan, R (1984)
 "Product Elimination: A Neglected Management
 Responsibility," Journal of Business Strategy, Spring.

3.4.25 Salerno (1983)

Salerno's work, a substantial contribution to the field, is both empirically based and normative. As well as describing the product elimination process as it exists in French manufacturing industry, he proposes a new model for the identification of weak products, which he calls Prodetector. Central to much of Salerno's investigation are the organisational aspects of product elimination decision-making, such as organisational functions involved in the elimination process, the degree of standardisation of the product elimination process, and so on.

More specifically, the objectives of his work were:-

- 1 To study the effect of various organisational functions and the type of product range on the importance accorded to the decision-variables or factors.
- 2 To study the involvement of various organisational functions in each stage of the product elimination decision-making process and to examine the effect of different types of product range on that involvement.
- 3 To study how formalised and standardised rules and procedures affect the efficiency of product elimination decision-making with particular reference to:
 - (a) the extent to which opinions vary among functions,
 - (b) the importance and extent of inter-functional disagreement,
 - (c) the clarity with which roles are perceived.
- 4
 - (a) To establish how often alternatives to elimination are considered.
 - (b) To establish how often the various implementation strategies are used.
 - (c) To study managerial opinion regarding the relative importance of product planning issues over the past and next 10 years.
- 5 From an analysis of the described behaviour and models, to draw conclusions and implications for management, and to suggest ways to improve such behaviour and models.

- 6 To build a model to improve the identification of elimination candidates.

The methodological approach taken by Salerno was to compare consumer goods companies with industrial goods companies.

Through the regional chambers of commerce, Salerno was introduced to 89 companies. 5 declined to participate, a further 20 were not included, as they were either unsuitable or unable to provide responses from 3 functional departments: marketing, finance and production. Of the remaining 64 companies, 32 were consumer, 32 industrial. The questionnaires were disseminated with the help of the Managing or Marketing Director in each company. A total of 269 questionnaires were completed and returned.

The independent variables studied for their effect on the product elimination process were: Industry, organisational function, types of ranges, formalisation and standardisation. The first two were operationalised in a straightforward manner. "Industry" was divided into consumer and industrial, while organisational function was divided into marketing, finance and production. Types of range had two aspects. The first, price level, is simple enough. The second, "length of the range" was fixed in comparison to an industry average. Formalisation and standardisation were measured on three seven-point scales, which examined:

- (a) the existence of clearly defined rules
- (b) the existence of detailed procedures
- (c) the extent of formalisation "stricto senso" (ie. written-down)

The dependent variables can be classified into two groups. The first group contains the decision variables. Salerno identified 46 variables from the literature which he factor-analysed to 12, a more manageable figure. In order to measure the importance accorded to each one, he meticulously constructed semantic interval scales with guidance from the method proposed by Myers and Warner (1968). His scales are of a very high quality indeed, with the

intervality empirically tested. However the variables constitute by far the weakest part of Salerno's methodology. As they were derived purely from existing literature, are more likely to indicate what management should do when eliminating a product, rather than what they actually do. It is highly likely that respondents judged some variables they may not have ever considered, or which require information which is unobtainable. The second group of variables are those which Salerno uses to establish the "efficiency" of formalisation on the following three variables is studied:

- 1) The amount of divergence in opinion regarding the importance given to the various decision variables.
- 2) The amount and frequency of interfunctional disagreement.
- 3) The clarity of role perception in product management.

The accuracy with which these factors reflect the organisational efficiency of product elimination is a matter for discussion beyond the scope of this present study. However, it should be noted that they differ considerably from those of Avlonitis, which might help explain the apparent contradiction in results.

The results of the thesis have been summarised by Salerno himself in his paper "l'élimination des produits non performants" in the Revue Française de Gestion. They are as follows.

- 1) The identification and analysis of dubious products has been less important to management than new product development and modification of existing products over the past 10 years. However, on the whole, the respondent companies said they would give greater attention to the problem of eliminating products in the following 10 years. Industrial companies do not seem to anticipate giving greater attention.
- 2) While 78 per cent of the companies said they do look periodically and systematically for elimination candidates,

closer examination revealed that procedures used were no more comprehensive than contribution analysis and profit analysis. 22 per cent said they did not have any regular review to discover any dubious products. Salerno lists the risks run by such companies, all the traditional problems incurred by not eliminating weak products. However, two fundamental and untested assumptions underlie this stance: a) that companies who do not review their product line to identify dubious products do not review their product line at all, or only review products performing well, and b) that companies who do not review the product line to identify weak products do not eliminate products efficiently or sufficiently. The basic proposition followed by Salerno which allows such assumptions is that those companies who do review their lines with a view to eliminating, have a system of elimination independent of their total product-management system and that this is highly desirable. No such assumption has been investigated, and no such hypothesis tested.

- 3) The degree of formalisation and standardisation of the product elimination rules and procedures is very low. The nature of the market, length of the product range or price level of the product do not influence this. However, like Avlonitis, Salerno found the highest degree of standardisation in the implementation stage of the decision.
- 4) Different functions exert differing influence over the various stages of the decision. The identification stage is mainly influenced by marketing, sales and finance. The analysis and decision-making stage is influenced by marketing, top management and sales. However, to concur with Avlonitis' findings, the final implementation stage is heavily influenced by production followed by marketing and sales. This shift is more evident in the industrial field. In general, the sales function is of greater importance in companies manufacturing low price level products.

- 5) The different functions within the company give varying importance to the decision variables. (see Table 3.25) However, in evaluating the strategic "corporate image" features largely in the "top 5" of each function as does "quality standards and job security".
- 6) In descending order of frequency, the following alternatives to product elimination are considered:
 - Promotion expenditure increase
 - Price increase
 - Product modification
 - Production costs reduction
 - Decrease in promotional expenditure
 - Finding new markets/applications
 - Decrease in price

While the first four are generally considered more frequently than the others some further differences are observed, for example with regard to "type of industry". Product modification is considered more in the industrial field than in the consumer field. Companies manufacturing products of a high price-level consider decreasing promotion more than low price-level.

- 7) The most common strategy used to implement the elimination decision is "phase out quickly". The second most common was "phase out slowly" while the least commonly used was "drop immediately". To analyse further, industrial products tended to be "dropped immediately" more frequently than consumer products. Phase out quickly strategy was more frequently used by companies manufacturing low price-level products. These results do not reflect those of Avlonitis who did not find the drop immediately strategy to be relevant in the engineering sector.

The final contribution that Salerno has made is the presentation of a model for the detection of weak products. As it essentially allows for the creation of a system tailored to the needs of a specific company, no attempt is made to describe its detail here.

Table 3.25 Comparison of the Importance of Decision Variables Among Functional Departments

General Management	Marketing	Sales	Finance	Production
Corporate image	Product fit with	Product fit with	Profit trends	Quality standards job
Quality standards	customer needs	customer needs	Price trends	security, Production
job security	Corporate image	Corporate image	Profitability	organisation, Capacity
Product fit with	Market share	Quality standards	of the product	utilisation, Batch sizes
customers needs	Job security	job security	Quality standards	Corporate image
Contribution to	Quality standards	Contribution to	job security	
sales volume	Sales trends	sales volume	Absolute profit	
Return on capital		Number of product complaints		

Source: Salerno, F (1983) "L'elimination des Produits
Non-Performants", Revue Francise de Gestion,
Novembre-Decembre

Basically, it draws on major findings of the survey, and owes its uniqueness to the following features:

- (1) It incorporates the opinions of all the major, functions not only in the creation of lists of criteria against which products will be judged, but also in the actual evaluation.
- (2) It allows for the inclusion of qualitative data.

3.4.26 Kent (1984)

Kent's interpretive study of product range policy in the Scottish Food Processing industry again bears witness to the gulf between "Marketing faith and marketing practice." The study aimed to:

- 1) examine how, in practice, product range policy decisions are made, and in pursuance of what objectives,
- 2) research in some detail how Managing Directors and Marketing Managers perceive, define and understand the policies they are applying,
- 3) show how the practice of product policy departs in significant ways from the theory as stated in the literature, in particular for the development of new products and for the elimination of old ones.

Kent carried out 12 depth interviews with Managing Directors or Marketing Managers in firms engaged in food processing for the retail or wholesale market that are located in central Scotland and which are not subsidiaries of English firms. All were small to medium in size. The interview schedule consisted mostly of open-ended questions, covering the following issues:

- 1) The nature of the markets the firms are operating in.
- 2) The general policies applied in respect of handling the range or ranges of product.
- 3) The circumstances that prompt feelings that some action or decision needs to be taken in respect of a product or product range.

- 4) The forms of corrective action open to managers in respect of a product or product range.
- 5) The relationship between product elimination and product modification as forms of corrective action.
- 6) The role of NPD in product range policy.

While the findings presented below will be limited to those directly concerned with product elimination decision-making, it is worth noting that New Product Development (NPD) was considered to be the most important activity when judged alongside the search for new markets, product modification, the search for new users and product elimination. The findings relevant to this work can be categorised into four.

- 1) With respect to performance information, Kent described what went on in the firms. Most companies collated daily production figures by product or product group. These sales figures were collapsed into monthly figures to avoid too many fluctuations. Most companies also compare actual and budget sales figures, as well as current and previous years' sales figures to identify trends. None of the companies appeared very concerned with market share, and in most, the measurement of individual products profitability caused difficulty. Three of the twelve companies used contribution accounting, four allocated costs by functional department, five allocated costs by product line groups, three to individual products. The important factor here is that profit was not really used as a measure of product performance. Indeed, small margins were not felt to be necessarily indicative of weakness, since they could be in response to competitive activity, or the raw material may increase in cost to an extent which cannot be covered by price. In addition, the profit of any one product in the company, is affected by the general sales level of the company, in any case profit information is not always available when needed.

- 2) The identification of weak products tends to be informal, the first sign of flagging sales is often when production is down. In companies producing perishables, a daily morning meeting over coffee was the forum used to discuss the previous day's sales and to compare them to the previous week's sales. Generally weak performance was considered to be low sales volume relative to the rest of the products in the range and relative to budget projections. Upon discovery of such a weak product, the first course of action was often to turn to the production equation and to decide if the problem was correctable or worthwhile correcting.

- 3) The findings confirm other empirical findings in so much as they report very little in the way of a systematic "diagnosis" routine. Price changes were notorious for only effecting a temporary change, while the weak product diagnosis - such as it is - has to contend with the fact that often what is "wrong" with a product in one area or retail group is not what is "wrong" in another. A further element confusing the picture was the fact that, often, action was needed quickly before adequate performance data could be assembled. The main corrective actions open to management are:

Changes to the marketing mix.

Although interconnected, changes to the product itself and its presentation.

Limited promotional deals; press advertising.

Repositioning of the brand:

Value analysis and ingredient changes.

- 4) Complete elimination was seen to be a very "last resort" affair, the broad reasons being that any profit contribution is better than none, minimising internal conflict, and the plain truism "hope springs eternal". Indeed five of the twelve companies had not dropped anything over the past few years. On the other hand, elimination did occur where there

was full utilisation of capacity and a simultaneous decision to invest in new plant, or where an alternative to a weak product could be found. Where perishable goods were concerned, ingredients could be re-mixed for a "new product". A major consideration to the companies was the packaging stock complete usage of which often deferred the elimination decision. The main specific reasons for retaining a product were:

- The weakness was thought to be temporary in nature
- Capacity was not fully utilised
- Elimination would cause overhead burden to be betrayed among fewer products
- Corporate image and the relations with the key customers might have been damaged by elimination.

As a general conclusion about elimination, Kent points out that the managers concerned were more interested in the company's health as a whole than the health of one particular product. None of the companies had an explicit product elimination policy.

Kent's findings largely confirm those of previous investigators (Hise and McGinnis 1975, Avlonitis 1982, 1983, 1984, 1985a) who found few formalised procedures guiding this activity, and that only products accounting for a low level of sales volume are eliminated. Informal subjective analysis of the marketing and financial implications for the entire company are the characteristics of product elimination decision-making.

3.4.27 Gauthier (1985)

One of the most recent additions to the literature on product elimination is an empirical study of French Manufacturers.

Gauthier (1985) set himself four basic objectives:

- 1) To assess the kind of product elimination process described in the literature.
- 2) To understand the extent to which the initial

circumstances triggering the elimination process influence that process.

- 3) To identify and understand variables and factors influencing product elimination behaviour.
- 4) To develop tentative recommendations for carrying out further research in this area and for product elimination decision-making.

The methodology he adopted to pursue these objectives was the "depth" interview, carried out in 15 small, medium-sized and two large French manufacturing companies. Marketing, Managing and Sales Directors were typically interviewed. The major impact of the findings derived from these in-depth conversations is the way in which they seem to indicate that the precipitating circumstances of a decision to withdraw a product from the market heavily influence the decision-reaching and implementation process.

In line with the findings of other empirical research (Hise and McGinnis 1975, Salerno 1983, Hise et al 1984), Gauthier found that product elimination is not perceived to be an issue that management has to face: it is neither independent as a function, nor are decisions recognised to be multi-staged. Few companies reported systematic product elimination behaviour. Only companies with relatively sophisticated information systems were more positive in their attitudes towards product elimination.

The remainder of the findings will be briefly renewed in relation to the three stages investigated: recognition and precipitating circumstances, analysis and decision-making implementation.

- 1) Gauthier reports that in five companies, a systematic search occurs only when specific events occur; for example the need to solve a specific problem or improving certain aspects of the business. Although periodic searches did occur in some ten companies, Gauthier explains that this relates more to the overall product management system than to a product elimination system.

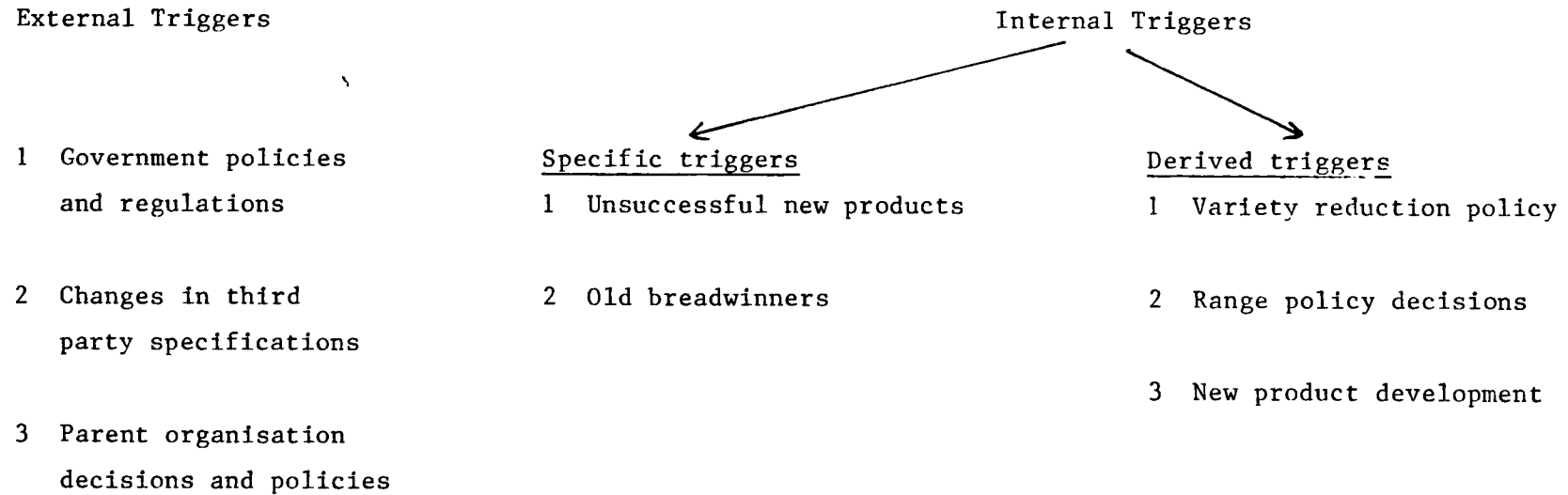
He found that product performance was measured using three basic criteria: past sales volume
 profitability
 product's share of the company's sales.

These findings contrast the normative criteria of ROI, and marginal contribution. Past sales volume and revenue were reviewed by all 15 companies at least once a year. The relative simplicity of performance measures was partly explained by the size of the companies interviewed and the length of the product range. While Gauthier does not develop the relationship between how the company recognised a product elimination candidate and the precipitating circumstances which caused the product to be dropped, he does develop an interesting list of types of precipitating circumstances, reproduced in Table 3.26.

- 2) Analysing why a product is performing badly depends on the collection of adequate and relevant information. Performance information found to be common was presented above, but Gauthier also investigated the collection of information pertinent to
 competitive activity
 product/market performance and opportunities

Only the big companies (over 1000 employees) had an in-house market research department. For most companies, information supplied by trade associations and their own sales force are the main ways of tracking competitive activity.

Table 3.26 A Classification of Precipitating Circumstances (Triggers)



Source: Gauthier, J P (1985) The Product Elimination Process in French Manufacturing Companies, Unpublished MSc Thesis, University of Strathclyde

Assessment of market opportunities was of primary concern to most of the companies interviewed. The sources of information were: trade association magazines and bulletins, conferences and trips abroad. Assessment of market share was found to be difficult, and not always accurate. While most companies computed future sales volume, at least in budget form, only one company made reference to the product life cycle curve.

The actual decision-making routines highlighted the importance of the role played by the original precipitating circumstances in the whole process. Where the elimination was the consequence of another decision there was little evaluation and no corrective measures were employed. The decision-reaching process was seen to be relatively short. Where the elimination was a result of detecting a weak product, the decision-reaching process was longer. Particularly in the case of unsuccessful new products, many alternative corrective actions were considered and the companies tended to be aware of many intangible implications of withdrawal (eg. company reputation and image). However in the case of "old breadwinners" there was less deliberation. Gauthier concluded that the precipitating circumstances, if more fully investigated, might explain differences in the nature and intensity of the decision-making process.

- 3) Again, Gauthier explains the effect of the precipitating circumstances, which can be loosely divided into two categories: those triggering a process over which management has no control; those triggering a process over which management does have control.

Where management has no control, such factors as market trends/ holdover demands have little effect on the timing and/or method of implementation. Where management does

have control, modifying the duration did not seem to be an issue: while stock and market trends will influence the duration, there is no preception of a need to adjust this.

The status of replacement parts was seen to be highly important, contradicting the findings of Hise and McGinnis (1975). The methods of elimination observed were similar to those reported in Avlonitis' study: phase out immediately, phase out slowly, drop and reintroduce as a special, factor, and depended on whether the company was keen to a) get rid of the product, or b) replace it with a new/different/modified product.

The major drawback of Gauthier's work is the limited scope imposed by the constraints and exigences of a "Masters by Instruction and Research". It is an extremely interesting and thought-provoking piece of work which allows us to draw at least one sure conclusion: that study of product elimination as a managerial function is only beginning and that findings to date have merely scraped the surface of the turbid mass of knowledge, and interrelationships that work in the depths. More specifically, he shows how many factors peculiar to the specific product elimination in question may in fact explain more than the more elaborate correlations regarding the external environment.

3.5 Product Elimination Literature: A Micro Approach

The purpose of this subsection of the literature review is to examine closely the similarities among the authors' recommendations of how to deal with each "stage" of the decision-making process. Inevitably, any chosen framework for analysing literature will not easily embrace the structure employed by every author in the field. This said, it has been necessary to find the ground most common to the majority of contributors, in order to achieve the objective of identifying repetition and omission. All the authors have considered at least one stage in the decision-making process, and

it seems logical to review the contributions to each stage (Identification; diagnosis; evaluation or implementation).

Where a writer has dealt with more than one stage of the decision-making process, the information regarding each stage will be slotted into the relevant paragraph.

3.5.1 Identification of Elimination Candidates

Most authors consider this first stage of the decision. Criteria are forwarded for identifying candidates as well as the forums for such identification. Table 3.27 shows the breadth of criteria suggested. Most are financially-oriented, the more elaborate ones appear to be little more than a more detailed breakdown of more pedestrian measures. For example, Houfek's article, dated 1952, suggests the criterion "profit margin contribution". Kotler's article 13 years later, uses the same criterion but is more specific: he includes price, overhead burden, unit total cost, unit variable cost, all which go together to define "profit margin contribution". The incremental contribution of normative writers between 1952 and 1977 is extremely small; most contributions were variations on a theme - for example, Sonneck and Hurst (1960) point out that "production efficiency" is an important "recognition" factor. Twelve years later Hamelman and Mazze include the same factor in their PRESS analysis under the guise of "manufacturing runs".

Most normative writers envisage some kind of regular review meeting which would consider these factors. These may be executed within the existing management structures as advocated by McSurely and Wilemon (1976) or they may be independent of the existing structures of managerial control, an approach favoured by most prescriptive contributions. There is little consensus regarding the intervals at which such meetings are convened: "regularly",

Table 3.27

The Recognition of Elimination Candidates

AUTHOR	FACTOR/DECISION	FORUM
- Houfek	Rank products by profit margin contribution	Periodic review committee
Sonnecken & Hurst	Profit Vs Goals; Profitability Vs Industry Average; Production efficiency; compactivity	Marketing Audit/Annual
- Alexander	Sales trend; Price trend; profit trend; existence of substitutes; products; product quality; executive time spent on product	Periodic Screening Procedure
- Kotler	Industry sales; company sales; physical volume price; cyclical adjustment; factor overhead burdon; unit total cost; unit variable cost	Annual
- Eckles	Inventory requirement; past sales volume; future sales volume; competitive activity total genseic demand	Monthly Product line scan
Worthing	Current and Past ROI; profitability; sales volume	Unspecified
- Hamelman & Mazze	Material costs; labour cost; sales and administration expend.; variable overhead costs; sales price; manufacturing runs per period. Use of SIN (rank) index	Annually (?)
Winkler	Market share; sales volume; sales forecast; production difficulties; market growth; overhead coverage products market acceptance	Unspecified
McSurely	Compatibility with company objectives; past and present volume. total sales, gross margin	Periodic review in existing structure
Kratchman, Hise, Ulrich	Sales volume, product's share of company sales, Market share, sales volume vs goals; market potential; ROI standards, variable costs Vs revenue; Executive time required	Computerised 'Red Flagging of weak products

Table 3.27 (continued)

AUTHOR	FACTOR/DECISION	FORUM
Browne & Kemp	Sales volume; ROI; raw material issues; average order size, rate of market penetration; response to promotion; performance Vs Budget	Regular Review of data
Drucker	Profitability, market penetration, sales growth rate, breadwinners	Unspecified
BCG	Market share; market growth;	Unspecified
Flutman	Market growth, profit	Unspecified
Wind & Clayclump	Market share; profit, future market share, profit	
Rothe	Minimum sales standards, market share, minimum production runs	Unformalised
Baccour	Sales, market share, gross margin; contribution total industry sales, average industry price	Unformalised and irregular
Banville & Pletcher	Profits, sales, cost Vs Contribution (not stage)	Unformalised and irregular
Avlonitis	Past sales volume; profits, future sales volume; share of company sales, market growth, PLC, operational problems.	

"monthly", "6-monthly" and "annually" are all mentioned, although no writer known to the current author justifies their recommendation. The most striking paradox is the gulf between what "should be" and what "is". As early as 1970 Rothe concluded that the identification of elimination candidates was far from systematic and formalised. Further descriptive studies from Baccour (1971), Hise and McGinnis (1975), Banville and Pletcher (1974) confirmed this view, yet all through the 70s normative writers went on advocating procedures that bore no relation to reality. However, the fact that actual practice does not correspond to the theories does not mean the latter is wrong. The acid test for the theories is whether or not firms following a normative approach perform better. If not, only then are we in a position to call for a modification of the theory.

No descriptive work to date has investigated the extent to which management deals with the identification of weak products through its existing planning and control structures. Finally the nature and scope of "identification factors" observed in field studies quite different from the recommendations. They are fewer in number, less complicated, take less time to evaluate and are nearly all readily identifiable and quantitative.

3.5.2 Diagnosis of Elimination Candidates and Revitalisation

Of all the stages of the product elimination decision, it is arguably this second stage which is most neglected by both prescriptive and descriptive writers. A little over half the writers reviewed in this chapter broach the subject. The picture is also obscured by conflicting terms of reference. As previously stated, "analysis" is defined in the current research as investigating why a product is weak. Some authors deal with this (Sonneck and Hurst 1960, Browne and Kemp 1976, Rothe 1971, Baccour 1971, Evans 1977).

However, others view "analysis" in the context of analysing the effect of dropping the product. (Kotler 1965, Worthing 1972). Several authors classified in this section only consider alternative corrective actions open to a company (Alexander 1964, Hamelman and Mazze 1972, McSurely and Wilemon 1973, Hise and McGinnis 1975). Others still deal with both analysis and consideration of alternative corrective actions (Eckles 1971, Avlonitis 1980).

As can be seen from Table 3.28, there is very little variation among authors considering the same aspects; analysis can be carried out in four ways i) regarding costs, price and profitability, ii) regarding the physical product and its performance or attributes, iii) regarding the argued product, image, packing, iv) regarding overall economic or industry trends. Correspondingly 4 areas for correction emerge: i) change in the physical product, ii) change in cost and/or price of the product, iii) change in the marketing of the product, iv) strategic move within the market place.

Perhaps it is because that there are fewer contributors to this stage that repetition does not seem as apparent as with either the "recognition" or "evaluation" stages.

Avlonitis suggests that product-specific variables affect the analysis undertaken and corrective action implemented, his work is still at the tentative stage, and only relates to the industrial field. Salerno, on the other hand emphasises the major contribution of the various organisational departments at this stage, but does not discuss decision-variables with specific reference to the stage.

As a final comment, it is fair to say that the "corrective actions" aspects is more widely covered than analysis issues which need refinement and further classification. However, the

Table 3.28 Diagnosis and Revitalisation of Elimination Candidates

AUTHOR	FACTOR/DECISION VARIABLE
Sonnecken & Hurst	Value analysis; price acceptability; product acceptability
Alexander	Lower production costs, increase batch sized, reduce from activity; reduce service levels; increase prom. activity, product improvement. Increase in price
Kotler	Modification potential; marketing adjustments potential; contribution beyond direct costs
Eckles	Cost analysis, suitability to company objective; promotional activity; product change, package change, new markets, formula change
Worthing	Profit/sales trend; competitive distinctiveness, customer loyalty
Hamalman & Mazze	Price change
McSurely & Wileman	Private branding; quality improvements, new image, feature improvements, style change, lower manufacturing costs, mechanised order handling
Browne & Kemp	Competitive activity, economic trends, introduction of new technology company, promotion mix, production scheduling and inventory; physical product and complementary services
Banville & Fletcher	(unspecified) No investigation
Hise & McGinnis	Product modification & improvement; price increase, increased sales force effort increase promotion, decrease price, additional market research, decrease in promotional expenditure changed channels of distribution, decreased sales force effort
Evans	Competitive retail value; product styles; price-performance widely advertised product selection; warranties; system variety
Avlonitis	Product modification, price increase; increased sales force effort, increased promotional expenditure; change channels of distribution, decrease price, decrease promotional expenditure, development of a new market

analysis will vary depending on the reason the product is under review. Little analysis would avert the outcome of head-office decree. Generally, analysis issues can be divided into three categories.

- a) those examining elements of profitability: cost, price manufacturing efficiency etc, value analysis.
- b) those examining the elements of marketing: image, packaging, customer satisfaction and preferences.
- c) those examining outside (uncontrollable) forces: competitive activity, market trend, technological trends.

The popularity of the first category reflects the relative ease of establishing performance standards and measures. The two other categories are far more difficult to deal with, being more subjective, less well documented and qualitative in nature. However the necessity for their inclusion in any full analysis is inescapable give that the product has moved to the ranks beyond those of pure economic existence. The literature has failed to provide outlines to guide management analysis in these areas, due to the fact that it has never sought to define existing practices and problems.

3.5.3 Evaluation and Decision-making

At this stage in the decision management has to decide whether to drop the elimination candidate. Despite any logical and financial reasons which indict the product and threaten its continuance in the range, many candidates are kept on (see Hise and McGinnis 1975, Avlonitis 1984) for a variety of reasons, usually qualitative and subjective. It is the time taken to consider such reasons which define the boundaries of this "stage". Most "evaluation factors" described in the literature relate to the position of the company once the dubious product has gone and provoke conjecture regarding the overall effect the elimination might have. For example, Sonneck and Hurst (1960) underline the importance that keeping a "full-line" may have, to be balanced against the potential savings to be gained from dropping the product. Many other authors paint

Table 3.29 Evaluation and Decision Making

AUTHOR	
Sonnecken & Hurst	Scope for the product line - (full-line); opportunity costs - marketing and production; potential savings related to the product; fit with company resources; parts and servicing
- Berenson	Profit security, phase in the plc; opportunity costs comparative advantage secured by the profit; company image; corporate objectives, full line policy; employee relations, customer relations
- Alexander	Defrayal of overheads; potential savings; effect of elimination on fixed & working capital; full line policy, company image; employee relations; complementarity.
- Kotler	Potential sales; exec. time released, opp costs; complement
Clayton	Profit, ROI; potential sales, phase in plc, investment to continue
- R W Eckles	Past & future costs; past & future scope/full line; new product possibility customer preference effect on fixed capital
- Hamelman & Mazze	Complementarity, substitutability
McSurley & Wilemon	Reallocation of fixed costs; residual demand; overhead defrayal; reallocation of resources, effect of suppliers, effect on customers
Worthing	Complementarity, customer relations capacity utilisation; employees relations
Browne & Kemp	Effect on other products; effect on company image, employee relation
Baccour	Contribution to overheads; money needed to continue product; opportunity cost; customer relations; fit with company objective; company image; effect on suppliers; substitutes on market; complementarity
- Hise & McGinnis	Ethical aspects; (customers; spare parts considerations) Legal restraints
- Avlonitis	New product potential; reallocation of capital, release of executive time, employee relations, substitutes; organised intervention

pictures of this kind of trade off. As can be seen from Table 3.29, the list of "evaluation factors" is impressive. Apart from the obvious duplications - "opportunity costs" feature frequently, several seemingly "different" evaluation factors are facets of the same problem. Taking opportunity costs, this evaluation factor seeks to have management consider the opportunities which remain unrealised because of time, space and many devoted to current ventures such as the elimination candidate. Thus, it also embraces factors like "reallocation of fixed capital", "executive time", and "potential savings to be made from dropping the product". Clearly, if savings made by dropping the product were minimal, the likelihood of reallocation of resources would be slim and therefore the opportunity cost represented by the elimination candidate would be very small indeed. Similar interrelationships can be found with "effect of the elimination on overhead defrayal and "profitability of other products"; "existence of a substitute on the market" and "customer relationships"; potential sales, potential profit, new product possibility and full-line policy. Indeed, it is the intricate interrelationships among all these factors which render this stage the most elusive of all. While both "schools" deal with the quantitative and qualitative factors, there does not appear to be the same consideration of the future in the descriptive reports. eg. potential savings from dropping the product do not appear in descriptive work. Further research is needed to ascertain whether this omission is through default or whether it represents a real inability to qualify this aspect in reality. The "competitive reaction" is only reported as a consideration in descriptive work. A substantial gap exists between the methods of evaluating the factors. Prescriptive work favours models and formulae while uncertainty and judgement prevail in empirical reports so far.

3.5.4 Implementing the Decision

Despite the undivided attention of several authors, this "stage" of the decision is sadly neglected by the normative

literature. This might well reflect the fact that answering "whether to" is less than certain than answering "how to" nonetheless it is possible to jeopardise the success of such a decision by disregarding its implementation. The factors which might help management to choose a strategy for dropping a product revolve around the following issues: stock levels; the market; replacement parts; holdover demand. The choice of recommended strategies is fairly limited - run out, factor, reduce variety, phase out. Only Talley and Weller suggest which factors might suggest which strategy.

It is to descriptive field studies that we must turn to find a wider range of strategies. Rothe reports that consumer goods companies are often in a position to "drop immediately" while Avlonitis reports the industrial option of dropping from the standard range and introducing the product as a special charging a premium price.

Evidently, all findings to date have to be verified, especially in the consumer field, where minimal detailed knowledge exists, close examination of both factors and strategies which actually feature in companies. In addition it would be helpful to know which factors influence which strategies, so that useful recommendations may be made to management.

Table 3.30 Implementation: Factors and Strategies

AUTHOR	FACTOR	STRATEGY
- Alexander	Replacement parts; stock; holdover demand	
- Kotler	Finished unfinished UNF stock; guarantees, salvage of capital, customer relations	
Talley/ Weller	Market trends, competitive position, effect on advertising, percentage of fued costs involved in pdct; distribution factors replacement product	Run-out variety reduction
- Eckles	Stock on hand; hold over demand replacement parts	
McSurely & Wilemon	Inventory; replacements, availability, residual demand	Factor; run-out; phase-out
Browne & Kemp	Finished stock; spare parts; customer relations	
Baccour	Holdover demand	
- Avlonitis	Market trends/Holdover demand, stock on hand, replacement parts effect on middlemen/customers replacement product development	Phase-out immediately Phase-out slowly Sell out, change to standard
- Rothe	Stock	Drop immediately

3.6 Recapitulation, Conclusions and Implications

In summarising this review of the product elimination literature four areas are of paramount importance.

- 1) The Nature and Scope of Empirical Knowledge.
Despite the increasing attention being paid to all aspects of the product elimination process (review and analysis of product performance; revitalisation and relaunch of products; evaluation of the implications of deletion; implementation of an elimination decision) by the business community (Sunday Times 1984, Financial Weekly 1985, Marketing 1981), very little empirical description or empirically-based theory exists to guide them. The bulk of the literature is normative, while empirical studies have been sectoral and difficult to generalise from.

- 2) The Elimination Decision and its Stages.
The importance of treating the stages of the elimination decision separately has only recently come to light. If decision variables are viewed together, one runs the risk of either missing out an important consideration or taking account of an issue where it is of least importance. Given the paucity of research into the decision stages, they have uncovered fewer factors or decision variables than are suggested by prescriptive work. This tendency has been encouraged by the sectoral nature of research studies. Our knowledge of what counts at each decision stage is far from complete. Related to this is the uneven distribution of knowledge from one stage of the decision to another. The "recognition" stage is the best documented, while "analysis" and "implementation" stages are mentioned by only a few authors.

- 3) The Managerial Setting of Product Elimination.
We are still almost completely ignorant of the managerial - or organisational - setting of the product elimination

decision. More recently, evidence has come to hand regarding the involvement of functional areas. We remain, however, in the dark regarding how the product elimination decision is dealt with in relation to other product decisions. While the work of Avlonitis has begun to enhance our understanding of these issues by describing the management and planning cycle activities used by some companies to detect "weak" products this implies that product elimination is a reactive process, dealt with largely through the system of management accounts. Nothing is known of the effectiveness of this system or whether eliminations are planned as part of overall product-market strategy or even through the yearly operational planning system. The extremely low-volume accounted for by eliminated products in the studies of Avlonitis and Salerno suggests that the management account system is less than effective.

To compound this situation we now know that not all product deletions occur due to poor performance. How then is the deletion considered and planned in those cases where sales performance is not so relevant?

4) The Influences on the Elimination Decision.

We now have evidence regarding the nature and extent of influence exerted by external factors on the product elimination process. Technological and competitive environments play a major role as does the size of the organisation and its product diversity. If these external factors help shape the content of the decision then what of the more immediate considerations which impinge upon managerial decision-making? Issues like the nature of the "problem", the intentions and objectives of management, the importance of the product to those intentions would be expected to influence the way the decision is handled and its outcome, but have not been systematically investigated. Intriguing clues have been left by the more recent studies.

Avlonitis hints at the important influence exerted by the "problem situation", while both he and Salerno indicate that the "importance" of the product will affect the nature of the decision process. Virtually no research has contemplated the intentions and objectives of management, although as pointed out some normative writers have pointed to the affect that company objectives might have on the elimination process. (Weller 1969, Alexander 1964, Berenson 1963).

That the theory contained within this body of literature bears little resemblance to the practice described by empirical work is of less importance than finding out if firms that pursue a pattern of elimination closer to the normative view perform better than those that do not. The dynamic and interactive nature of marketing management necessitates generalised theories if they are to be of any use to the enormous variations of real-worked decisions. Any study attempting to find this out as well as explore the anatomy of deletion decisions and influences on those decisions would be extremely ambitious, and well beyond the talents of one doctoral candidate. It is therefore emphasised that the study described in subsequent chapters addresses only some of the weaknesses highlighted by the foregoing review of the literature.

CHAPTER 3

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CHAPTER 4

Research Methodology

4 Research Methodology

4.1 Introduction

The purpose of this chapter is to describe the research designed to meet the objectives, which were derived from the literature reviews. The chapter begins by specifying these objectives and the content of the research. It then goes on to review research methods in general and explains the choice of methods used for the study. Finally, an appraisal of the method is given

4.2 The Research Problem and Objectives

In describing extant research, it was accepted that our knowledge of the product elimination process has been vastly improved in recent years. Nevertheless, detail about the process has largely been confined to specific industrial sectors. Also, while we have been given a glimpse of how broad (external) environmental factors influence the elimination decision process, we are still largely ignorant of how circumstances within the company affect the process. Consequently, the essence of the research problem is "What is the nature of the product elimination process across British manufacturing industry?" Correspondingly, the research objectives are:

1. To extend our knowledge of the anatomy of the product elimination process beyond the current limits of sectoral descriptions.
2. To describe those company and product-specific factors that influence the process which previous research has ignored.

4.3 The Research Content

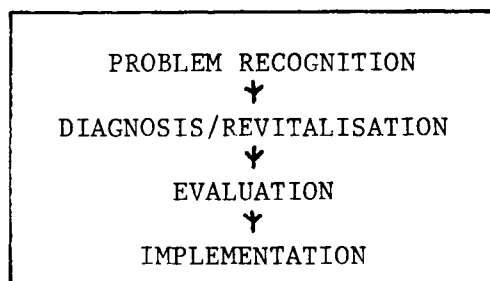
Having specified the broad aims of the research, attention is now turned to the specific issues the study embraces. Four areas are of interest:

- 4.3.1 The elements of the product elimination decision - making process.
- 4.3.2 The nature and effect of product-specific factors on the decision-making process.
- 4.3.3 The "locus" or managerial setting of the product elimination process.
- 4.3.4 The nature and effect of strategic issues on the product elimination process.

4.3.1 The Elements of the Product Elimination Decision - Making Process

Building on the major theoretical articles (Alexander 1964, Kotler 1965, Bell 1979) and on the recent empirical work on the subject (Hise and McGinnis 1975, Avlontis 1980, Salerno 1983) the premise of a multi-staged product deletion decision process was accepted. Specifically, a four-staged conceptualisation was accepted, conforming to the pattern suggested by decision theory literature (Cyert, Simon and Trow 1956; Mintzberg Raisinghani and Theoret 1973, Nutt 1984) (See Figure 4.1).

Figure 4.1 : The Decision-Making Process



4.3.1.1 Problem Recognition

The literature reviewed suggests two modes of problem recognition.*

Avlonitis and James (1982) discussed 8 problem situations which trigger the identification of an elimination candidate, including a change in third party specifications, government policies and regulations and parent company decisions. This is the first mode of problem recognition. Situations such as these present themselves as a crisis, and the affected company hardly needs to "detect" them actively. The current study specifically addresses the "problem situation" as one of its key issues. (See paragraph 4.3.2).

However, other "problem situations" were directly concerned with the performance of products and could indeed be detected using the methods suggested by the "normative" view.

The normative view also confirmed by empirical research, (Salerno 1983, Avlonitis 1986) suggests that a problem may be recognised using a number of factors such as "product review criteria" and "minimum standards of performance". This is the second mode of problem recognition.

In investigating this second mode the study examines:

- a) the use of minimum standards
- b) the use of product goals and objectives
- c) the use of review criteria.

* The word "problem" is used here to indicate a situation where a decision has to be taken. The "problem" may refer equally to an "opportunity" which demands that a product be considered for elimination - for example, a new product development.

4.3.1.2 Diagnosis

Once a product has been recognised as an elimination candidate, the task is, according to prescriptive writers, to diagnose the problem with a view to taking appropriate action. (Alexander 1964, Kotler 1965, Hise and McGinnis 1975). From our review of empirical studies however, it can be seen that researchers have sadly neglected this particular stage of the decision. Indeed, some sectoral evidence has emerged in recent years from the work of Avlonitis (1980) and Gauthier (1985), but this needs to be replicated and expanded in other industry sectors to improve our general knowledge of the topic. Further, while the work of these two authors has suggested that the specific circumstances of the product affect the managerial deliberations of this stage, virtually no research has specifically addressed the issue.

Our research will therefore examine:

- a) whether or not elimination candidates undergo a diagnostic routine
- b) the anatomy of the diagnostic routine, where it occurs
- c) whether or not corrective action is considered
- d) the nature of the corrective action which may be implemented.

4.3.1.3 Evaluation and Decision-Making

The literature suggests that not all problems can be resolved keeping the current range of products intact. (Alexander 1964, Avlonitis 1983, Salerno 1983). This implies that managers have to consider removing the elimination candidate from the product range. Such an evaluation, according to normative theory, attempts to foresee the impact of dropping a product on the rest of the company's operations, so that a final decision can be made, either to retain or drop the product. It is the nodal point of the entire elimination process. In prescribing ways of organising this important evaluation, normative writers have developed several neat

and objective solutions (Kotler 1965, Hamelman and Mazze 1972). In contrast, the sketchy evidence provided by empirical researchers so far indicates that this stage is the most perplexing of the entire decision process. (Avlonitis 1983, Salerno 1983, Gauthier 1985). Conditions of uncertainty, risk and inertia are tackled by managerial judgement and experience of a set of evaluation factors, rather than by formulae and calculations.

Our investigation will attempt to add to our knowledge by examining:

- a) whether or not elimination candidates are evaluated in the manner suggested by normative writers,
- b) the nature of the factors used to evaluate elimination candidate,
- c) the reasons why products are retained.

4.3.1.4] The Implementation of the Deletion

Our review of the literature revealed that it is the recent work of researchers which has shed some light on various methods of deleting products and the rationale for their selection (Rothe 1971, Avlonitis 1983). The methods are referred to as "implementation strategies" while the rationales are "implementation factors". This stage of the decision has not been adequately dealt with in the body of product elimination literature and we have virtually no findings which can represent accurately the way in which managers drop products across British manufacturing industry.

Our study will therefore focus on:

- a) the alternative implementation strategies open to managers,
- b) the factors that govern the choice of strategy.

Apart from the specific areas of interest in each of the four areas, the study builds on extant knowledge by:

- a) comparing product elimination decision-making behaviour among different manufacturing sectors, embracing both industrial and consumer goods companies,
- b) comparing such behaviour among different sizes of firm.

4.3.2 The Nature and Effect of Product-Specific Factors on the Decision-Making Process

The literature review in the previous section drew attention to the environmental and organisational factors which have been found to influence elimination decision behaviour. (Avlonitis 1983, 1984, 1985). Concurrently, fleeting attention has been given to the impact product factors may have on the decision making process. For example, Salerno (1983) suggests that the price level of the product, along with its place in the product range, affect the content of the elimination decision. Avlonitis (1984), drawing on interviews with decision-makers, draws attention to the impact that the original problem situation may have on the decision content, although this was not specifically examined. Gauthier (1985) examined the impact of the problem situation on decision-making behaviour in his sample of 12 French manufacturing companies. (These findings were discussed in Chapter 3). Apart from these three writers virtually no research has pursued the question further, and the study in hand seeks to fill this gap in our knowledge.

Specifically the research will:

- a) identify and describe those product factors which impinge upon the elimination process,
- b) attempt to explore the way in which these factors affect the process,
- c) describe those specific circumstances which trigger the decision-making process,

- d) suggest the way in which these triggers affect the decision-making process.

4.3.3 The Locus, or Managerial Setting of The Product Elimination Process

Although the product elimination decision is an element of a company's product policy, we remain largely ignorant of how it is dealt with in relation to other product decisions. Normative theory suggests a "product line review" or a "product audit" specifically to detect elimination candidates. On the other hand the findings of empirical research, ~~such~~ as they exist, point to non-specific product planning meetings as the most likely venue for the detection of elimination candidates. The overriding problem is that this information is, as far as we know, rooted in a single research study, that of Avlonitis (1984). Moreover, there is little evidence to indicate the effectiveness of such a system, and we are not in a position to hypothesise given the lack of generalisable information on the subject. This study will therefore attempt to correct the balance by exploring:

- a) the type of managerial and product planning carried out in companies,
- b) the mechanisms and forums used for managerial and product planning,
- c) the extent to which the product elimination decision is seen to fall into these mechanisms and forums.

4.3.4 The Strategic Context of Product Elimination Decision-Making

The review of the literature on corporate strategy developed a theoretical, strategic context for the product elimination decision. The contribution of product elimination to the strategic planning process was explained, together with an assessment of how

different strategic objectives and strategies might impinge upon the product elimination decision. In parallel, the work of organisation theorists has underlined the concept of strategic choice as an important independent factor for understanding organisational decision behaviour. The most fundamental strategic choice is the delineation of markets and therefore environments in which the company competes. The link therefore, between strategic choice and product elimination lies in the evaluation of the organisation's position in relation to those environments - or markets - deemed to be important and the strategic action taken in view of this evaluation.

To the best of our knowledge virtually no empirical research has even attempted to explore this linkage, despite its potential importance to an understanding of product elimination decision-making behaviour.

In the current study, an attempt is made to explore this question of how the various issues of strategy affect the product elimination decision.

Investigation is hampered, however, by relatively sparse information about issues of strategy in British manufacturing companies. We decided, therefore, to explore which elements or issues of strategy were relevant to British manufacturing companies, as a precursor to examining how they impinge upon the product elimination process.

4.3.5 A Review of the Research Content

In order to help design a research survey which would allow collection of the data required, a résumé of the issues of interest is provided.

- 4.3.5.1 The study seeks to describe the content of four stages of the product elimination decision process across British manufacturing industry.
- 4.3.5.2 The study seeks to describe differences in the decision's content among industry sectors.
- 4.3.5.3 The study seeks to describe the range of precipitating circumstances that cause companies in British manufacturing industry to consider eliminating products.
- 4.3.5.4 The study seeks to relate these precipitating circumstances, and explore any other relevant product factors to the content of the decision process.
- 4.3.5.5 The study seeks to explore and describe the various product planning mechanisms and forums where elimination candidates are identified.
- 4.3.5.6 The study seeks to describe issues relevant to British manufacturing industry's strategic planning.
- 4.3.5.7 The study seeks to relate these strategic issues to product elimination behaviour.

Given these seven areas of interest, it can be seen that the thrust of the inquiry is at once exploratory/descriptive and explanatory.

4.4 The Research Design

The current work benefits from the pioneering research of Avlonitis (1980) and Salerno (1983), who together provide an empirical account of the product elimination decision-making process in their respective industries of interest. They applied areas of theory not directly related to product deletion, which proved important for explaining the nature of product elimination decision-making.

No research study, however, can be exhaustive and both of these left unanswered questions. In addition, in that neither study has been replicated, their reliability is not yet established (Adams and Schvaneveldt 1985).

The areas of interest in our work have been selected to:

- a) explore aspects of product elimination behaviour as yet unmentioned,
- b) to replicate aspects of previous studies in order to establish their reliability and enhance the reliability of this study.

4.4.1 The First Issue: Qualitative or Quantitative?

Consultation of textbooks on research design suggests data sought to be of three basic types: exploratory, descriptive and explanatory (causal) (Babbie 1973, Green and Tull 1978, Chisnall 1986). Consequently, research must be designed to contend with the nature of the data sought. In our case, all three types of data are required (see Section 4.3.5). This said, the method chosen needs to be flexible enough to unearth (explore) characteristics of product elimination decision-making, and rigorous enough to allow measurement of these characteristics and examination of their inter-relationships. A qualitative and quantitative approach comes to mind.

Before explaining the choice of methods a brief overview of the pros and cons of each of these broad methods is given.

4.4.1.1 Qualitative Research and Data Strengths

The strength of qualitative methods is usually associated with the depth and richness of the data it provides:

"qualitative data are attractive for many reasons: they are rich, full, earthy, holistic, 'real'" Miles (1979) p.590

While quantitative data can be compared, tabulated and manipulated in various controlled or "objective" ways, qualitative data, especially in the social sciences, offers greater depth of understanding and meaning (Davis 1976).

Moser and Kalton (1971) point out that the primary advantage of qualitative methods is that they "dig deeper" and get a richer understanding, than more formal techniques.

The MRS study group (1979) makes the point that often, information sought by marketing managers is often of a complex and subtle nature amenable to investigation by qualitative techniques.

Chisnall (1986) defines the essence of qualitative research as diagnostic, seeking to discover what may account for certain types of behaviour, seeking a deeper understanding of factors, sometimes covert, which influence decisions.

Van Maanen (1979) stresses the importance that qualitative researchers attach to the unfolding of social processes, rather than the social structures imposed.

In the more specific realm of investigating product elimination decision-making, it has been qualitative data which have provided knowledge of the issues of relevance. By way of example, it was the qualitative approach of unstructured interviews which uncovered the "problem situations" causing companies to drop products (Avlonitis 1980).

Qualitative Research and Data Weaknesses

The overriding problem facing qualitative researchers is that methods of analysing qualitative data are not well formulated. Whereas quantitative data are associated with clear analytical

conventions, the qualitative analysis is generally self-generated and controlled. As Miles (1979) puts it:

"how can we be sure that an earthy, undeniable, serendipitous finding is not, in fact, wrong" p.590.

Chisnall (1986) describes qualitative data as impressionistic and subjective.

Other concerns about qualitative methods include the extent to which the data they generate are a) reliable, b) objective, and c) parsimonious; all three are important components of scientific enquiry (Babbie 1973).

A number of practical issues may also be considered as weaknesses in qualitative methods. Qualitative data collection is labour-intensive and requires a good deal of skill to be carried out correctly. It can also be extremely time-consuming. The qualitative data itself is often copious, comprising as it does, innumerable observations and recordings. The ensuing analysis - unguided - is lengthy.

Discussion

It appears, then, that a qualitative method of data collection is appropriate for:

- traditional preliminary exploration
- sorting out and screening behaviour
- exploring complex behaviour
- explanatory models of behaviour (grounded theory).

The last of these four is perhaps the most contentious because scientific theory, by its very nature has to be general - and this is an issue of considerable debate regarding qualitative methods. As Glaser and Strauss (1967) point out, however, it is the history of qualitative researchers and their use of data in a non-systematic, non-rigorous way which has jaundiced many

researchers' views on qualitative data. Glaser and Strauss argue for qualitative data to be systematically obtained and analysed, a point echoed by Miles (1979):

"the need to develop grounded theory usually exists in tension with the need for clarity and focus... a rough working framework needs to be in place near the beginning of the work" p.591.

4.4.1.2 Quantitative Research and Data Strengths

The obvious benefits of quantitative data are that the numerical form makes comparison easy, data are standardised, visible and amenable to the tests of classical survey statistics. (Cooper and Branthwaite 1977). In general, sample sizes are greater and controlled in such a way as to be random, and representative of the population from which they are drawn. This allows greater confidence in accepting the reliability (or generalisability) of the findings. Moreover, the advances made by quantitative researchers in the 1930s, in translating theoretical concepts into research operations gave greater scope for controlling construct validity (Glaser and Strauss 1967).

As there are well-documented guides for analysis and thus less room for subjective interpretation, the research findings' internal validity can be more easily assessed (Miles 1979).

Since concepts under investigation have to be operationalised, quantitative methods are both specific and parsimonious. In addition, quantitative researchers, in attempting to explain reasons for and sources of observed events, assume a deterministic posture. The three characteristics - "specific", "parsimonious" and "deterministic" comprise the basis of scientific investigation (Babbie 1973).

These aspects, taken together highlight the scientific rigour that accompanies the use of quantitative methods. Additionally, where quantitative researchers have failed to provide adequate accounts

of their approaches, there is a body of well-drawn guidelines to assist the research consumer in deciding on the quality of the research (Adams and Schvaneveldt 1985).

Quantitative Research and Data Weaknesses

Complaints of quantitative methods seem to centre, not on the scientific content of the study, but on the nature of the data they provide. For example, it is often suggested that quantitative methods are able to investigate only the more rational aspects of motivation and behaviour, and therefore miss the subtleties and idiosyncracies of individual or organisational behaviour (Cooper and Branthwaite 1977).

There seems to be a general disillusionment with statistical data, on the grounds that it is superficial and often without theoretical direction (Glaser and Strauss 1967; Mintzberg 1979).

In a similar vein, Van Maanen (1979) reiterates some of the problems that organisational researchers face:

"Our [quantitative] data manipulation techniques have become increasingly complex, mathematically sophisticated and governed by strict assumptions, but, paradoxically, our interpretive frameworks which make such data meaningful have grown looser, more open-ended, fluid and contingent" p.522.

Moreover, a general sentiment echoed throughout marketing literature is that quantitative methods - surveys in particular - are more inclined to describe and interrelate verbally expressed sentiments and beliefs rather than describe actual conduct. In short, they focus on what Ames (1970) entitles the "trappings" of behaviour, not its "substance".

A further weakness of quantitative methods is that content validity is nearly always uncertain. In the context of product elimination decision-making, Rothe (1971) did not find "profit margin" to be a relevant issue in recognising a product elimination candidate. Small wonder, since he did not include it in his list of items to be rated.

Discussion

Quantitative methods are appropriate for:

- testing hypotheses
- synthesising a large number of variables to determine associations (and the strength of associations)
- controlling for construct validity and
- controlling for reliability.

This said, quantitative methods can best fulfil objectives where they are linked to grounded theories derived from the "real world".

In developing a research design, we felt it important to use a combination of methods to try to overcome the shortfalls of both broad methodologies. We decided to maximise the benefits of a qualitative design and data, and at the same time minimise its weaknesses by employing some quantitative methods and data. Conversely, the weaknesses of the quantitative data could be modified through the qualitative data. Such a combination of methodologies in the study of a phenomenon has been called triangulation. (Denzin 1978, Campbell and Fiske 1959). Attention is now turned to the choice of specific data collection methods.

4.4.2 Rejected Methods

4.4.2.1 Experimentation

Experimentation, according to Weick (1965) is

"a process where events occur at the discretion of the experimenter and controls are used to identify sources of variation in subjects' response". p.195

Its major advantage lies in the relative accuracy with which it helps the researcher establish causality. While this objective is not outside the scope of the current research, it is inappropriate because general knowledge of the product elimination process

remains rudimentary; only the first relevant variables have been uncovered by recent research and we have no way of identifying which important ones should be selected for experimentation until we have fuller evidence of the range of variables at play. Similarly, until we have an idea of the situational independent variables (as opposed to those environmental independent variables dealt with by Avlonitis, 1980) we are not in a position to control them at all.

Given what evidence does exist regarding the average duration of product elimination decisions, experimentation would appear to be impractical due to the probable time lag between cause and effect.

4.4.2.2 Observation

Observational methods fall largely into two types. Simple observation, in our case, would involve identifying those products recently dropped from product ranges and systematically analysing the company environment to explore and explain relationships. This method, however, was wholly inappropriate for meeting the objectives of the current work because its focus is on the internal situational influences on the product elimination process.

The second observational technique is called field observation, which would involve direct observation of participants in the elimination decision process and recording of their activities, attitudes, values and behaviour. Like simple observation, this method entails some advantages:

- (1) the reactive measurement effects are minimised (ie those effects caused by an individual's awareness of being tested or by the nature of the investigator) Webb et al (1966) Chisnall (1986)
- (2) the need for detailed respondent cooperation is minimised and at the same time intense 'depth' data can be obtained.

There are, on the other hand, several limitations:

- (1) in observing a decision-process, the method makes intensive use of researcher's time in organisational research
- (2) because the focus of the method is intensive (as opposed to extensive) it suffers from the problems associated with small samples: generalisability
- (3) as with other forms of ex post facto research there is no control over the independent variable chosen in relation to other possible independent variables and the truth of the hypothesised relationship between dependent and independent variable cannot be asserted with confidence (Kerlinger 1973). In short, there is a built-in question as regards internal validity.

Along with these reasons, observational methods are not suited to the current study because:

- (1) the product elimination decision is not a continuous one, but rather, it is intermittent. This would limit the number of companies it would be possible to observe and restrict the findings to a highly-specific incident
- (2) because the product elimination decision is taken over time by several key participants, often at management meetings, the direct observational method would lose its primary advantages because the observation would have to be, not only apparent to the respondents, but agreed by them. (Zaltman and Burger 1975).

4.4.2.3 Study of Organisational Documents

A content analysis of sales records, requisitions, minutes of meetings, pro formas and other relevant material would provide hard, accurate facts about aspects of respondent companies and their product elimination behaviour. The advantages of the approach are:

- (1) there is little bias stemming from the forgetfulness (or distortion) of the respondent
- (2) the researcher is not dependent upon the view of a single respondent
- (3) the level of time-consuming participation of respondents is vastly reduced
- (4) historical evidence can be gathered which might otherwise remain unearthed if those people involved at the time of the decision were unable or unwilling to give information.

However, a number of general disadvantages are associated with this method:

- (1) it is time consuming and demands considerable resources
- (2) it is insensitive to attitudes and values, resulting in superficial data
- (3) it is dependent upon the existence of adequate written information regarding the subject of study.

In the current study it was felt that the qualitative aspects of the decision were at least as important as factual data (Avlonitis 1984, Gauthier 1985). In addition, product elimination does not

appear to be a process guided by written documents (Avlonitis 1985). For these reasons, document analysis was felt to be inappropriate.

4.4.2.4 Study of Time Logs/Diaries

In this method, respondents are asked to keep a record of their activities in a "diary" which is set out according to chosen periods of time. Alternatively, they are asked to note the nature and time of behaviour related to a topic of interest to the researcher.

The advantage of the method is that an extensive survey can be carried out without the use of interviewers and without the problems associated with mail surveys.

However, a number of distinct disadvantages provided its use in the current investigation:

- (1) respondents would have to be trained to recognise and describe behaviour relevant to product elimination. This would bias responses and be exceedingly time-consuming for the respondents
- (2) the cooperation and commitment of business people was believed to be difficult to obtain
- (3) the variation in response would have restricted the amount of analysis.

4.4.3 Accepted Methods

In order to explore and explain the numerous forces at play in product elimination decision-making, we decided to use the survey research method, for the following reasons:-

- (1) The objectives of the research required factual, attitudinal and behavioural data. Survey research provides the researcher with the means of gathering

the qualitative and quantitative data required to meet the objectives of the research (Kerlinger 1973, Kinnear and Taylor 1987).

- (2) The required data largely related to a decision-making process, that had been shown to span several months by past research work. One of the greatest advantages of survey research is its scope: a great deal of information can be collected from a large population, economically (Kerlinger 1973).
- (3) Survey research conforms to the specifications of scientific research: it is logical, deterministic, general, parsimonious, specific (Babbie 1973).

All survey research, however, is subject to certain disadvantages which must be borne in mind when choosing the technique and throughout the execution:

- (1) The unwillingness of respondents to provide the desired data. The overriding concern here is of the non-response error which can invalidate research findings.
- (2) The ability of respondents to provide data. In studying managerial decisions, it is important to target those individuals in the organisation with the knowledge and experience of the subject under examination.
- (3) The influence of the questioning process on the respondents. Respondents may give the answers they think the researcher will want to hear, thus distorting the accuracy of the data.

While these constraints are serious in that they can reduce the validity of research results, they can be reduced by careful compilation of the survey test instrument (Kinnear and Taylor 1987).

Surveys can be divided into three types: personal interview; mailed questionnaire; telephone interview. (Nachmias and Nachmias 1976; Kerlinger 1973). As discussed previously, the objectives of the research in hand required both rich qualitative information and measured quantitative data. This led to the decision to use focused interviews, a form of the personal interview. Neither mailed questionnaires nor telephone interviews are appropriate for extensive probing or open-ended questions. The advantages and disadvantages of the three types of survey are detailed in Table 4.1.

While there is considerable linguistic variation in the terms used to describe the different types of interviewing, they can be categorised into three groups:

- (i) the structured interview
- (ii) the unstructured or focused interview
- (iii) the depth or clinical interview.

Table 4.1. Relative Merits of Principal Methods of Data Collection

<u>Advantages</u>		
Personal Interview	Mail	Telephone
Most flexible means of obtaining data	Wider and more representative distribution of sample possible	Representative and wider distribution of sample possible
Identity of respondent known	No field staff	No field staff
Nonresponse generally very low	Cost per questionnaire relatively low	Cost per response relatively low
Distribution of sample controllable in all respects	No interviewer bias	Control over interviewer bias easier; supervisor present essentially at interview
High quality (informed) response	Respondent can answer at his time to "think things over"	Quick way of obtaining information
Ambiguity can be avoided	Certain segments of population more easily approachable	Callbacks simple and economical
Ability to observe respondent	Speedy form of data collection	
	Safeguards anonymity	
<u>Disadvantages</u>		
Likely to be most expensive of all	Bias due to non-response often indeterminate	Interview period not likely to exceed five minutes
Headaches of interviewer supervision and control	Control over questionnaire may be lost	Questions must be short and to the point: probes difficult to handle
Dangers of interviewer bias and cheating	Interpretation of omissions difficult	
Slow	Cost per return may be high if nonresponse very large	Certain types of questions cannot be used, for example, complex scale questions
Adequately trained interviewers are few in number	Certain questions, such as extensive probes, cannot be asked	
Gaining access can be difficult	Not always clear who replies	
	Likely to be slowest of all	

Source: Based on Ferber, R and Verdoorn, P J, (1962) Research Methods in Economics and Business, New York, Macmillan

4.4.3.1 The Structured Interview

In the structured (or standardised) interview set questions are asked, their sequence and wording are fixed, and the answers recorded in standardised form. Using this method, variability between interviewers is reduced resulting in comparability of data (Zaltman and Burger 1975; Selltiz et al 1965; Moser 1967; Nachmias and Nachmias 1976). This type of interview is based on three important assumptions:

- a) for any research objective "the respondents have a sufficiently common vocabulary so that it is possible to formulate questions which will have the same meaning for each of them (Richardson, Dohrenwend and Klein, in Nachmias and Nachmias 1976)
- b) it is possible to phrase all questions in a form meaningful to each respondent
- c) the sequence of questions must be identical as preceeding questions form the context of subsequent questions.

The drawback of this type of interviewing is that its rigidity results in data of little depth, like the mailed questionnaire (Hyman 1954). In short, while the reliability of the technique is higher than with more informal types of interviewing, it is not appropriate for probing, searching questions (Moser 1967).

4.4.3.2 The Focused Interview

In the guided, focused or unstructured interview, most of the questions are open ones, designed to encourage the respondent to talk freely about each topic. Among authors, there is a good deal of disagreement as to whether or not this interview is guided by any written document (Moser 1967, Green and Tull (1978) say no; Zaltman and Burger 1975, Nachmias and Nachmias 1976 say yes). This type of interviewing avoids the inflexibility of the structured

interview but at the same time assures that all relevant topics will be covered. The researcher can investigate emotions, motives and gain a fuller understanding of the respondent who will often be encouraged to disclose information which cannot be obtained by more structured questioning. It is based on four assumptions:

- a) it takes place with respondents known to have been involved in a particular experience
- b) it refers to situations that have been analysed prior to interview
- c) it proceeds on the basis of an interview guide specifying topics related to the research hypotheses
- d) it is focused on the subjective experiences regarding the situations under study.

The major drawbacks from this type of interviewing stem from the increased role of the interviewer. Firstly, interviewers must be skilled and have a certain knowledge of the subject under study. Secondly, greater scope is given to the forces of interviewer bias, in questioning and in the recording of answers. In short, the process is not always reliable (Moser 1967).

4.4.3.3 The Depth or Clinical Interview

In this type of interview, the informant is encouraged to talk about the subject under investigation and the course of the interview is mainly guided by him. The role of the interviewer is usually confined to clarifying responses and probing generally (Moser 1967). No prespecified set of questions is employed, and usually no schedule is used. This technique has been used by sociological researchers when investigating sensitive subjects such as attitudes to marijuana, because in these situations the conversation evolves naturally and the information obtained is not only copious, but richer in its fullness and more revealing of the

personality of the respondent. However, there is a price for the increased quality of the interview. Comparability is reduced further still, and interviewer variation is likely to be even more pronounced (Zaltman and Burger 1975).

In deciding on the type of interviewing to use for a research study, a straight comparison is impossible because the advantages of one method can turn out to be the disadvantages of another. This is shown in Table 4.2, which describes the two broad types of interviewing, structured and unstructured in terms of their advantages and disadvantages.

The ultimate decision therefore must be derived from the stated objectives of the research.

For the qualitative enquiry of the study in hand, formal interviews were clearly unsuitable. The depth or clinical interviews were also rejected because, as well as gaining an understanding of the complexities in the product elimination decision, the information obtained was to be used to formulate a valid test instrument for the quantitative enquiry. This necessitated a certain degree of comparability of qualitative data, and focused interviews were therefore chosen.

Table 4.2 The Advantages and Disadvantages of Different Types of Interviews

	Advantages	Disadvantages
Standardised or Structured Interviews	Interviewer briefing and training simplified Less scope for interviewer bias Less interviewer variation Classifying, coding and analysis simpler Results comparable Higher reliability Greater opportunity for measurement	Questions must be simple and (usually) closed Data lack depth Lower validity Cannot probe Cannot obtain clarification of ambiguities
Depth, Focussed or Unstructured Interviews	Questions can be deep, searching Data rich and full High degree of validity Probing possible Can obtain clarification of ambiguities	Interviewers need skill and training Interviewer bias may increase Greater interviewer variability Results often not comparable Reliability questionable Less scope for measurement

For the quantitative part of the study, it was methodologically conceivable to use formal interviews, but this would have been a most inefficient way of using the researcher's time, and no funds were available to engage the services of professional interviewers. Two alternatives remained: telephone interviewing and a mail questionnaire.

As can be seen from Table 4.3, the major advantages of telephone interviewing are to do with speed, efficiency and access to a wide distribution of sample. However, a telephone interview must be short and simple. This leaves little possibility of asking several scaled questions, or of asking respondents to rank items on a scale. It was therefore decided to eliminate this method of data collection, (see Table 4.3) leaving the mail questionnaire as the most appropriate method of collecting quantitative data.

The mail questionnaire is a self-completion document: the respondent completes the questionnaire with no direct help. It therefore has to be meaningful to respondents, both in terms of concept and language. The question is the basis of the test instrument, and as such, must be given careful consideration regarding type, sequence and wording, especially since there are no opportunities to motivate the respondent, probe for meaning or clarify anything.

The practical advantages of the mail questionnaire are legion: it is relatively cheap; it does not require trained staff or interviewers; processing and analysis is simpler (given adequate knowledge of computer procedures) (Selltitz 1965).

The major scientific advantage of the mail questionnaire is that the bias which may result from using an interviewer, is eliminated. There are however important drawbacks, the most serious being non-response. The problem that stems from non-response is that the researcher must assess if the non-respondents are in some way

different from the respondents, which would inhibit generalisation of the research findings. However, the specific effects of non-response on the quality of the research findings are not clear. Obviously non-respondents differ from respondents in their willingness to respond, but, in the business community especially, little is known of the nature of non-respondents.

Table 4.3 A Guide to Preferred Data-Collection Methods Under Alternative Survey Conditions

Conditions of Survey			Possible Data-Collection Method(s)*			
Funds	Time	Type of Data	Personal Interview	Mail	Telephone	Comments on method
Restricted	Restricted	Few Items			X	Assuming telephone population representative
Restricted	Restricted	Much info-	X			If funds permit
Restricted	Ample	Few items		X	X	Assuming telephone representative
Restricted	Ample	Much information	X	X		Non-respondent follow-up needed
Restricted	Ample	Few items		X	X	
Restricted	Ample	Much information		X		
Ample	Restricted	Few items	X		X	Assuming telephone representative
Ample	Restricted	Much information	X			
Ample	Ample	Few items	X		X	Assuming telephone population representative
Ample	Ample	Much information	X			
Ample	Ample	Few items	X	X	X	
Ample	Ample	Much information	X	X		Either joint or one method alone.

Source: Based on Ferber, R and Verdoorn, P J (1962) Research Methods in Economics and Business, New York, Macmillan

Consumer research is at least armed with categories of non-respondents such as "movers", "away from home" or "out at the time", all of which can be assessed in terms of impact on the research, or even eliminated through mechanisms such as call-backs (Moser 1967).

This issue of assessing the difference between respondents and non-respondents was researched by McDonagh and Rosenblum (1965). They compared the results of a mail questionnaire with those of subsequent structured interviews, and found no significant differences in the responses of the two groups. They conclude that "the mail questionnaire may reveal representative respondents in spite of the partial return from the sample of the universe contacted". A similar study by Sudman, Greenley and Pinto (1965) confirmed this conclusion.

Clearly, this area is under-researched, and because of inadequate knowledge of the effects and nature of non-response, the researchers must do their utmost to reduce non-response. Yet, we are ignorant of what response rates are "adequate" in organisational research. In general, the overall response rate is taken as a guide of the representativeness of the sample respondents and some would say that 50 per cent is adequate for analysis and reporting (Babbie 1973). Kerlinger (1973) however adopts a far stricter stance when he says "if mail questionnaires are used, every effort should be made to obtain returns of at least 80 to 90 per cent". There is great diversity of opinion. Nachimas and Nachimas (1976) report that typical response rates for a mail survey are between 20 and 40 per cent. This includes consumer research. Pearce (1966) reported that market research companies typically expect response rates of up to 20 per cent when researching industrial respondents, while recent research by Jobber (1986) quotes response rates of industrial surveys between 17 per cent and 60 per cent with an average of 36.4 per cent. Jobber and Bleasdale (1987) in their study, reported that industrial market researchers expect response rates of between 10 and 40 per cent.

In the current work measures were taken to reduce non-response and estimate the differences between respondents and non-respondents.

Further drawbacks of the mail survey technique have been summarised by Nachmias and Nachmias (1976):

- (1) They can only be used when the questions are simple and straightforward enough to be understood with the help of written instructions and definitions.
- (2) The answers have to be accepted as final; there is no opportunity for probing beyond the given answer, to clarify ambiguous answers or to appraise the behaviour of non-respondents.
- (3) The researcher cannot be sure that the right person completes the questionnaire.
- (4) The respondent can see all the questions before, answering any of them so various answers cannot be regarded as independent (Moser and Kalton 1971).

It was felt that in order to obtain quantified information about product elimination decision making across a widely dispersed sample of British manufacturing companies, the mail questionnaire provided the most practical cost effective method. Careful attention was paid to the design of the questionnaire, and the mailing itself to try to overcome the limitations described above. In addition, the mail questionnaire was to be based on the information collected during the interview phase, which would not only enhance its face validity (Adams and Schvaneveldt 1985) but also provide a cross-check for the findings.

Two final points should be made regarding the choice of this method which comprised both focused interviews and a mail survey.

Firstly, such an approach mirrors that taken by Avlonitis (1980) which is, to the best of our knowledge, the first comprehensive analysis of the product elimination decision. By replicating, to some extent, his methods further knowledge would be gained regarding the reliability of both studies (Adams and Schvaneveldt 1985).

Secondly, in accepting these methods, the investigation could be incorporated into a wider study of product elimination being carried out at Strathclyde University (Project Dropstrat). While this entailed drawbacks - which will be described later in the chapter - it provided the researcher with the ideal situation and resources to carry out the research.

4.5. The Survey Process

Having described the rationale behind the choice of method, attention is now turned to the survey process itself. The interview process will be described first.

4.5.1 The Interview Implementation Process

In describing the interview process, three topics are of importance: the design of the schedule; the sample contacted and the response; and management of the interview. The last section is included for the benefit of future researchers who wish to interview business executives.

4.5.1.1 Design of the Interview Schedule

There are pitifully few sources of information about the development of a schedule for use with business executives. Most textbooks deal with the problems faced by researchers managing a team of field workers in a study of consumers (Moser 1967; Nachmias and Nachmias 1976; Adams and Schvaneveldt 1985). A notable exception is the work of Dexter (1970) which was used extensively by the author. This said, there are a number of golden rules which apply equally to street or doorstep interviewing and to interviewing business executives. (Moser 1967; Kerlinger 1973; Chisnall 1986; Babbie 1973; Cannell and Kahn 1968).

The respondents must be able to answer the question; they must have adequate knowledge to answer. Equally, respondents must be willing to answer the question. Only questions related to the research problem and objectives should be put; anything else is extraneous. This is an important point since, especially with qualitative research, the temptation can be to attempt to cover too much, to ask everything that might turn out to be interesting (Moser 1967). The type of question must be appropriate for the information it seeks to elicit. Basically the question may be of two types: open ended or closed. The advantages of closed questions are that they are reliable, and are easily coded and analysed. They are, however, superficial (Kerlinger 1973). Open ended questions are flexible, have possibilities of depth, can circumvent misunderstanding, can detect ambiguity or inconsistency and achieve rapport between interviewer and interviewee (Kerlinger 1973). The major drawback of open ended questions comes during their analysis (Payne 1957). This said, open ended questions predominate in unstructured interviews (Chisnall 1986, Oppenheim 1966). Accordingly, questions must be clear, couched in language familiar to the respondent and ordered in such a way as to encourage full participation as well as guiding the respondent's thoughts through a logical progression, from one topic to the next. This last point is extremely important as careful attention can maximise past associations and memories and minimise the biasing effect of question order (Schuman and Presser 1981).

Finally, care must be taken not to suggest that there may be some desirable answer. (Cannell and Kahn 1968, Oppenheim 1966).

With such advice in mind the interview phase was developed to evoke description of issues relevant to corporate strategy, product planning and the elements of the product elimination decision-making process outlined in Section 4.3.1. To enhance the depth and accuracy of the data, two schedules were used. The first (Appendix 1) was designed to encourage general descriptions of the company's strategic and product planning as well as its general approach to product deletion. The second (Appendix 2) was designed to focus the respondents' mind on a recently eliminated product, and to elicit a product specific account of what happened and why. Using this approach, a cross-check on answers would be provided as well as a much-needed micro analysis of the decision. As previously explained, the opportunity to collect data arose through the execution of a wider study of product elimination which was carried out at the Department of Marketing, University of Strathclyde (Project Dropstrat). This said, the interview schedule incorporated issues related to both thrusts of investigation. The discussion that follows, therefore, covers only those topics of interest to the work in hand.

In both schedules open-ended and closed questions were used, although open-ended questions predominated in keeping with the exploratory nature of the interview phase of the research. The main difficulty associated with open ended questions, that of analysis, was tackled by the use of cassette recording, the fullest transcription of the interviews and meticulous attention to the analysis of the transcription. Full account of the analysis of both the interview and mail survey data is given in the next chapter.

The funnel sequence (Nachmias and Nachmias 1976) was used to facilitate a smooth and logical interview. For both schedules, the first few questions were general, factual and not too demanding.

The initial stage was followed by questions of a more specific and detailed nature.

The first schedule began by asking about the company its products and markets and organisational structure and number of employees. These questions were used to classify the companies, but their primary purpose was to relax the respondents, letting them talk about "their business".

The second set of questions were aimed at obtaining information about the companies' strategic and product planning, while the third set was concerned with general questions about product elimination in the companies.

The next four sections, using more specific open ended questions evoked description and opinion regarding the various stages of the elimination decision.

The second schedule opened by asking the respondent to choose a recently-eliminated product which interested them, and solicited general and factual information about the product and why it was dropped. The next four sections proceeded through the stages of the decision asking questions about what happened, what issues were of importance and why.

Within the structure of the two schedules, there was enough latitude to allow probing into those issues which appeared promising. Careful noting of responses allowed the researcher to judge when to omit questions that had been answered or that might jeopardise the successful completion of the interview. In addition, this flexibility was necessary, since what little evidence there is about interviewing "elite" individuals suggests that the successful interviewer will allow the respondents to

introduce their own notions of what is relevant since the surprising or atypical response in these situations may well suggest a revision, reinterpretation or an extension of theory. (Dexter 1970; Kincaid and Bright 1957; Zuckerman 1972).

4.5.1.2 The Implementation of the Interview Stage

Implementing the interview phase of the study involved two important tasks. First, the sample had to be drawn, involving the definition of the population of interest, identification of an adequate sampling frame and communication with the sampling units. Second, the actual process of interviewing had to be planned and conducted. This involved the mundane tasks of arranging dates, times and transport and deciding on methods of recording the data given by respondents as well as the challenging exercise of conducting a professional executive interview. While these activities were undertaken without severe difficulties, especially with regard to the first task, some minor problems could have been avoided if authors of theses and dissertations described more fully the obstacles they came across in carrying out executive interviewing. The following paragraphs, therefore, cover the rationale for and execution of the sampling process, together with a practically-oriented account of learning how to interview top executives.

The Sampling Process

In order to extend knowledge of product elimination behaviour into the field of consumer goods companies and to replicate previous work in the industrial field, it was necessary to define the population of interest very broadly.

Knowledge of the breadth of industries and industry sectors was gained by consulting the Standard Industrial Classification. As products were of interest, service industries were discounted. (SIC code 61 to 67; 71 to 79; 81 to 85; 91 to 99). Similarly extraction, refining and processing industries were not included in

our conception of the population. (SIC codes 21, 22, 23 and parts of 24, 2100 to 2471, 2511 to 2514).

Also, one category of products was omitted: clothing and footwear (SIC code 45). It was felt that since fashions, styles - even colours - change so very rapidly, that description of the elimination of these products would be unrepresentative of and unrelated to the deletions of the majority of products manufactured in Britain. This is not to say that such a sectoral study is of no intrinsic interest, but that clothing and footwear is something of a special case.

For the remaining SIC industries, Miracle's (1965) product typology scheme provided a useful guide for industry selection. On the basis of nine product characteristics, Miracle classified products into five groups ranging from fast-moving consumer goods (FMCG) to major capital equipment. The nine characteristics are: unit value, significance of each individual purchase to the customer, time and effort spent purchasing by customers, rate of technological change, technical complexity, service requirements, frequency of purchase, rapidity of consumption, extent or variety of usage. The five categories are established by rating products from very high to very low on each of the nine characteristics. The five categories are:

- 1) cigarettes, candy bars, razor blades and soft drinks;
- 2) groceries and small hardware items;
- 3) radio and television sets;
- 4) automobiles, high quality household furniture;
- 5) electronic office equipment, steam turbines, specialised machine tools.

As Miracle's classification was felt to be too detailed with respect to consumer goods, and too vague as regards the different categories of industrial goods, we felt it necessary to modify the typology. A five-category framework was devised for this study.

The five categories were:-

- A. Fast-moving consumer goods (food, drink, tobacco);
- B. Industrial operating supplies (stationery goods, conversions of paper and board, small hand tools, implements, nuts and bolts);
- C. Consumer durables (electrical appliances, domestic furniture, radio and television);
- D. Industrial components (automotive components, control components and instruments, temperature measuring and controlling instruments, tubing, ducting);
- E. Capital equipment (machine tools, ventilating and air conditioning equipment, pumps, earth-moving equipment, elevators).

The population was thus stratified by industry. A further stratification variable was the size of the company. In keeping with Avlonitis' study, which we wished, in part, to replicate, the conceptual population was made up of firms employing more than 100 people. It was felt that comprehensive data might not be collected from very small companies which would be likely to manufacture (and therefore eliminate) fewer products. In any case, an indication of the product elimination behaviour of the smaller enterprise would still be obtained by surveying companies employing between 100 and 499 employees. This is the EEC definition of the small company. Medium-sized companies were defined as having between 500 and 999 employees, while more than 1000 employees indicated a large company.

The Sample Frame

The execution of survey research demands that an adequate list of subjects exists to represent the population under study. This

usually means having a list of the members of the population together with a description of their characteristics so that researchers can select their sample in a controlled fashion. In the current work, we were restricted by the available directories which list our defined population. This meant that the operational population was restricted to companies listed in one or more of the following directories: Dun and Bradstreet, Key to British Enterprises and Kompass all of which classify companies by industry and provide an indication of numbers employed. Industry-specific directories were not used because there is an inadequate number of them readily available which might span the breadth of the industrial sectors under study. As with any survey research, the limitations of the sampling frame should be signalled (Babbie 1973). First, with both Kompass and Key to British Enterprises, inclusion is restricted to those companies who agree. Second, with both these directories the industry listings have a multiple entry for companies manufacturing products which fall into more than one SIC code. Third, the Key to British Enterprises lists the "top" 20,000 companies in the UK. These limitations have implications for the generalisability of research findings, but were not felt to impair the quality of the interview findings, which were to be exploratory and grounded in their orientation.

In order to cover all industry sectors and sizes, yet not be overwhelmed with data, a minimum sample size of 25 companies was set, with a maximum of 35 companies. A total of 125 companies were approached, half of which were large in size. At this stage of the study we were particularly interested in large companies as we felt they could provide greater breadth of information about product elimination decision-making. An exploratory questionnaire that attempted to determine the extent of development of product elimination systems and willingness to cooperate in the study was mailed personally to the Managing or Marketing Director of the sample companies (See Appendix 3). After a mail follow-up a total of 33 companies expressed their willingness to respond, a response rate of 25 per cent (See Table 4.4). Although the sampling plan was not statistically random, the results of the interview survey were not felt to be jeopardised as they were not to be considered general to the population as a whole.

Table 4.4: Request and Response Sample for the Interview Survey

	A	B	C	D	E	
SMALL	M = 5	M = 6	M = 6	M = 8	M = 4	M' = 29
	N = 3	N = 0	N = 4	N = 4	N = 0	N' = 11
	R = .60	R = 0	R = .66	R = .5	R = 0	R' = .38
MEDIUM	M = 7	M = 8	M = 8	M = 8	M = 5	M' = 36
	N = 1	N = 1	N = 2	N = 0	N = 2	N' = 6
	R = .14	R = .12	R = .25	R = 0	R = .40	R' = .16
LARGE	M = 15	M = 12	M = 13	M = 10	M = 10	M' = 60
	N = 3	N = 3	N = 3	N = 3	N = 4	N' = 16
	R = .20	R = .25	R = .23	R = .33	R = .44	R' = .26
	M' = 27	M'' = 26	M'' = 27	M'' = 26	M'' = 19	M''' = 125
	R'' = 7	R'' = 4	R'' = 9	R'' = 7	R'' = 6	N''' = 33
						R''' = .25

M = Stratum Request Sample Size

N = Stratum Response Sample Size

R = Stratum Response Rate

The reasons for refusing to be interviewed were as follows:-

Time constraints	10
Office contacted has no responsibility for decision	7
Letter sent - no reason given	10
Company policy not to participate	1
Short response	1
Consider topic inappropriate as:	10
a) much of the product line is custom-made or,	
b) so many small items are made, difficult to answer	

TABLE 4.5 Profile of the Sample Interview Companies

INDUSTRY/COMPANY	FIELD OF ENDEAVOUR	SIZE
A.1	Fresh and Frozen Foods	Small
A.2	Packaged Cakes and Biscuits	Small
A.3	Instant Beverages, Tinned and Bottled Food, Confectionary	Large
A.4	Cocoa and Sugar Based Confectionary	Large
A.5	Dairy Foods and Drinks	Large
A.6	Animal Foodstuffs	Small
A.7	Whisky Distillers	Medium
B.1	Paper, Board Manufacturers	Large
B.2	Wood Free Paper and Board Manufacturers	Large
B.3	Reprographic Equipment and Materials	Medium
C.1	Cabinet/Domestic Furniture	Medium
C.2	Clocks	Small
C.3	Electrical Appliances	Large
C.4	Wall Heaters and Boilers (Domestic)	Large
C.5	Kitchen/Bathroom Furniture	Small
C.6	Carpets	Medium
C.7	Carpets	Large
C.8	Glassware	Small
D.1	Capacitors	Small
D.2	Printed Circuits Boards	Small
D.3	Lightweight Rubber & Plastic Tubing	Small
D.4	Scientific Testing Instruments	Small
D.5	Automotive Components	Large
D.6	Automotive Components	Large
D.7	Electrical and Fibre Optic Connectors	Large
E.1	Milling Machines	Large
E.2	Excavating Equipment, Cranes	Large
E.3	Pumps	Medium
E.4	Elevators and Escalators	Large
E.5	Industrial Saws	Medium
E.6	Electronic Communication Test Measurement Equipment	Large

The list of companies in Table 4.5, shows their respective fields of endeavour and sizes. Only 31 companies appear in this list as two interviews proved to be unsatisfactory. In one case, the Managing Director who had agreed to an interview had little decision-making authority, which was based at the company's head office in the South. In the second case, the Managing Director although agreeing to be interviewed was not available on the day and his stand-in, a Director proved to be somewhat hesitant and difficult to motivate.

In all cases, a top executive was interviewed, typically Managing and Marketing Directors, but also Marketing and Product Managers.

4.5.1.3 The Interviewing Process

Once responses had been received, the task remained to contact interviewees and conduct the interview. An overview of the major texts which deal specifically with the mechanics of interviewing reveals the complexity involved in conducting a good interview (Dexter 1970; Bingham and Moore 1966; Gorden 1957). Less well documented, however, are the logistics of arranging, timing and handling an interview, especially with business executives. An attempt is made, therefore, to summarise the author's experience for the benefit of students who wish to carry out interviews with top executives.

Arranging dates and times

In reporting their survey of elite personnel, Groholt and Higley (1970) underline the problems of scheduling. Elite personnel are prone to sudden last-minute changes in schedules, it is therefore important to build some "slack" into a programme of interviewing. The authors suggest a maximum of two interviews a day, geographical spread permitting, but this author's experience would suggest that one or two free mornings or afternoons in a week of interviewing will be necessary to accommodate last-minute changes.

With business executives, interviews have to be arranged some time in advance, since the respondents are often away on business (Kincaid and Bright 1957). This is even more important if the interviewer has to travel to carry out the interview, or a series of interviews in a given area, away from home. It is recommended that initial contact is made three to four weeks in advance of the time the researcher wishes to conduct the interview.

It is unwise to arrange appointments shortly before lunch or at the end of the day unless the interview can be completed with certainty. The author's experience suggests that respondents impatience can be problematic, and such arrangements are risky if the respondent is at all late for the interview.

On several occasions a lunch appointment was suggested. This proved to be an unsatisfactory arrangement because the attention of both interviewer and interviewee is not complete, following the schedule is impaired and both note-taking and tape-recording are rendered difficult. It should be said, however, that a working lunch in an office was not as awkward.

Handling the Interview

The following excerpt from Bingham and Moore (1966) illustrates the improbability of suddenly becoming a good interviewer:

"He should have good judgement, imagination under control and special education in business research so that he can be readily trained to digest facts as they are given to him and make deductions promptly [...] He must be resourceful enough to gain an interview yet avoid being so self-assertive that his attitude repels. He must know how to be diplomatic if the interviewee disagrees with him and never let a discussion become an argument. Another pitfall he must guard against is a know it all attitude" p.142-143.

Given this list of attributes, and those detailed by other authors (Gorden 1957, Dexter 1970), it was accepted that the first few interviews would probably prove to be less successful than the later ones. We therefore decided it was apposite to make at least

two visits to every company, so that missing information could be gathered, and points of uncertainty resolved.

While it is something of a truism to say that the executive interviewer should be prepared, our experience suggests that advantages are to be gained from preparation, and that certain penalties are paid for lack of preparation. As Kincaid and Bright (1957) have commented:

"Our experience proved that the respondents in many cases expected that we would be well-informed about their company, at least to the extent of having read the publicly available literature" p.307.

Our task was facilitated by the fact that several of the respondent companies were large household names, about which a good deal has been written. For the less well-known companies a knowledge of the product range, the number of employees, the major competitors, and two years' sales turnover figures proved highly beneficial in two important ways. Firstly, it revealed the seriousness and professionalism of the research study, which helped overcome communication barriers and establish rapport. Secondly, it gave the interviewer not only the confidence, but the knowledge to probe past "public relation answers" and help unearth what really goes on, and why. These experiences concur with the work of Zuckerman (1972) who studied Nobel laureates.

In our experience, arriving "on time" was unsatisfactory where the interviewee's time was restricted. In many instances the interviewee would not be called until the interviewer had arrived, at which point the secretary or receptionist would have to locate the respondent, who might often be in a meeting or making an important telephone call. Ten or fifteen minutes often elapsed before the respondent was free, which could cause problems where he had stipulated an hour for the interview. Arriving a quarter of an hour early compensated for this and allowed extra time for gleaning information at the reception.

The location of the interview was not without importance. Most interviewees suggested a quiet office, but some proposed that the interview take place in the reception area, the staff refectory or an open-plan office. None of these locations were satisfactory since respondents were more inhibited in these "public" places, and as we were recording the interview, the quality of the recording was often impaired.

The precise nature of each interview varied from company to company. The interviews lasted an average of four hours, ranging from two hours to six and a half hours, with an average of two visits to each company. Generally, the interviews followed a simple pattern of four stages. In the first stage, the interviewer presented herself and the study. As Dexter (1970) recommends, it is important to a) stress the interviewer's definition of the situation, b) encourage the interviewee to structure the account of the situation, c) let the interviewee introduce to a considerable extent, his notions of what he regards as relevant. This introductory format helped accomplish three things. Firstly, preconceptions the respondent may have harboured regarding the objectives of the study were dispelled. This reduces the likelihood of respondents giving what they consider to be the "desirable" or "right" answer. Secondly, it clarifies to the respondent that his perceptions and opinions are of greatest interest. Thirdly, emphasising the confidentiality of individual responses and promoting the respondents view helps reduce the amount of figurehead or public relations responses.

The second stage consisted of asking respondents for easily recalled, factual information about the company, its products and markets. The main function of this short sequence was to put the respondent at ease by allowing him to talk generally about his domain. The third stage began the interview "proper", and the general pattern of the schedule was followed. A note was kept of issues covered before the question was formally asked, to avoid duplication and time-wasting. Respondents for the most part spoke

freely about their product elimination activities and reacted well to requests for clarification and elaboration. The fourth stage of the interview involved the product-specific interview schedule. A total of 50 product elimination case histories were generated. The basis upon which these products were selected for study was that either they had been recently eliminated or that they were interesting to the respondent. The case histories allowed respondents to elaborate on and give examples of information volunteered previously. Recalling a specific instance of product elimination decision-making often revealed undisclosed information, thus provoking greater exchange.

The organisation of both interview schedules proved to be logical, providing a well-conceived framework on which to hang the discussion. The willingness of respondents to give freely of their time and experiences greatly helped the novice interviewer in question, but the occasional problem should be signposted.

At the outset of the interviews, a few respondents were wary and hesitant. While they had agreed to be interviewed, they were not entirely at ease. Introductory remarks often helped dissipate this tenseness, especially if the respondent feels that the researcher is interested in his company and in what he has to say. Good preparation helped to convey such interest, as did taking the time to ask conversational questions, in familiar language about their business (Zuckerman 1972).

A second problem was felt to be the "public relations answer". As Kincaid and Bright (1957) suggest:

"considerable probing is needed to distinguish between what is company policy for creating desired public impression as against what actually happens" p.309.

This is a difficult problem to overcome - it may not even be recognised as a problem. Certainly, a familiarity with the language and tone of company documents gives the researcher a feel

for the sensitive areas of corporate image, but this is not enough to elicit the truth. Both the product-specific schedule, and the two-visit system proved useful for rephrasing and repeating questions and thus detecting discrepancies or "rehearsed" answers.

A third problem was the tendency of some respondents to stray from the point and elaborate on a different element of their responsibility. If this happens frequently, or at great length, the interview may well finish before the desired information has been sought.

Such situations are not easy to handle, although persistent re-phrasing of the question can often elicit an answer. Gorden (1969) has some useful hints here.

Finally, accuracy in reporting the respondents' views was helped by the use of a small tape-recorder. The usual disadvantages of recording an interview centre on the anxiety and nervousness provoked in the respondent. The accuracy of responses can be jeopardised since respondents do not want to be recorded saying "the wrong thing". Concurring with the experience of Zuckerman (1972) such fears appear to be unfounded when dealing with an "elite respondent". The respondents in the current study did not seem to be reticent and appeared to ignore the machine in any case, they were all advised that, should they wish to disclose anything sensitive, the machine could be switched off. Indeed the use of the tape recorder proved to be vital to the success of the interview, relieving the interviewer of the simultaneous tasks of listening, writing and thinking of the next topic for discussion. In this way, a genuine exchange could take place, rapport could be built up, and the accuracy of complete transcriptions for analysis was obtained.

The analysis of the interview transcriptions is discussed in chapter five.

4.5.2 The Mail Survey Implementation Process

The purpose of conducting the mail survey in this study was to inform or confirm some of the findings of the interview phase. So varied were the data collected during the interview phase, that potentially, an enormous amount of investigation could be carried out.

However, unlike the interview survey, the mail survey was designed to measure a specified set of variables. The variables were identified during the interviews and the aim of the postal questionnaire was to quantify and interrelate these identified variables. It was therefore necessary to be clear and specific about which factors were to be investigated. Such a constraint is quite normal in survey research; indeed, delineation of the areas of investigation is as important and demanding as being comprehensive. In the current case this task was rendered more necessary, and difficult, by virtue of the fact that the study was to be executed in tandem with another concurrent and related study using the same test instrument.

This approach was possible as both pieces of work related to aspects of, and influences on, product elimination decision-making behaviour. From the researcher's point of view it was desirable as it enabled the study in hand to be carried out, enabling the researcher to co-ordinate and implement the interview stage and giving access to the secretarial, stationery and computing facilities necessary to achieve its objectives. The major disadvantages were the potential complexity and length of the postal questionnaire and the compromises that were needed in the design of the test instrument and the sampling process.

4.5.2.1 Design of the Mail Questionnaire

In order to guide the questionnaire design a list of the areas of interest was drawn up, omitting certain issues touched on by the interviews (see Table 4.6).

Table 4.6 Issues of Relevance to the Mail Survey

Company Industry

Company Size

Strategic Issues

Product Planning Modes

Number of Product Eliminations

Elimination decision behaviour:-

- precipitating circumstances
- product review criteria
- corrective action alternatives
- evaluation factors
- implementation, factors and strategies
- timing

From the interviews it was clear that the case history approach was an efficient way of having a respondent recall product elimination behaviour. It was also felt that behaviour recalled in this way might be, in a sense, more accurate since respondents would describe what happened and what was important to one specific decision, rather than what "can" happen or what is "usually" important.

On the other hand, some areas of investigation were related to general patterns of organisational behaviour and could be described easily and without reference to any specific instance. It was therefore decided to approach data collection in two ways: at the level of the company and at the level of the product. The areas of interest are broken down into these categories in Table 4.7.

Table 4.7 The Classification of Relevant IssuesCompany-level: Company Industry

Company Size

Strategic Issues

Product Planning Modes

Amount of Product Elimination

Product Review Criteria

Implementation Factors and Strategies

Table 4.7 (cont'd) The Classification of Relevant Issues

Product-level: Facts about the product
 Precipitating Circumstances
 Corrective Action Alternatives
 Evaluation Factors
 Implementation Strategies
 Timing.

Due to the space restrictions, some issues had to be dropped: minimum standards, product objectives, analysis of elimination candidates.

The questionnaire was pretested in five local companies, representing each of the relevant industries. The questionnaire was completed in the presence of the researcher. This way, respondents could ask for clarification when needed, and after finishing were asked to relate any difficulties and dubieties they had not previously mentioned. The researcher took careful and detailed notes throughout these sessions, and, as a result of the pre-testing, several questions were re-cast, scales revised and some questions dropped.

The final questionnaire was divided into four sections. (See Appendix 4) Most of the questions in section one, two and three are relevant to this study. None of the questions in section four are relevant to this discussion.

The funnel format was chosen to avoid contamination of the respondents' minds, while the general pattern of questions went from easy to difficult. (Cannell and Kahn 1968; Chisnall 1986).

The wording of questions was, as far as possible, consistent with that used by the interview respondents (Oppenheim 1966).

A respondent orientation was achieved by a full explanation of the survey, by asking questions fully and keeping checking methods largely consistent (Festinger and Katz 1953).

Section I was concerned with industry, size and strategic factors. Both industry and size (Questions 1, 2 and 3) were measured using an open-ended format for familiarity and ease at the beginning of the questionnaire.

A simple dichotomous closed question (Q4) preceded more detailed investigation of strategic planning, to filter out those respondents not engaging in strategic planning. The length of time measured by the strategic plan was facilitated by a simple checklist (Q5a).

The relevance of certain issues to strategic planning was measured using a simple rating scale. The specific issues were those gleaned from the interviews. Respondents were asked to rate each issue's relevance to their own strategic planning on a five point scale, where a rating of five indicated extreme relevance and one indicated little or no relevance (Q5b). Five points were chosen for the scale to provide adequate flexibility without giving too many choices which can be difficult and time-consuming (Zaltman and Burger 1975). In addition, semantic designations were given for points on the scale, ranging from 1 "not at all relevant" to 5 "extremely relevant". The lower end of the scale which would have embraced "extremely irrelevant" was considered inappropriate for our purposes.

Strategic alternatives, based on Ansoff's (1968) growth vector matrix, were measured in terms of their importance in achieving company objectives (Q6). A simple scale similar to the one described above was constructed substituting "importance" for "relevance" as the dimension being measured.

Section II was devoted to product planning, product reviews and general information about product elimination in the company.

The definition of product planning was developed and refined during the pilot testing. A simple filter question was set to establish the existence of product planning in the company, and open-ended questions were asked to obtain information about the forums and issues (Qs 10 and 11). Open-ended questions were set because the findings of the interviews suggested that relatively little is known about this kind of planning activity in British companies. Consequently, it was qualitative rather than quantitative enquiry that was felt to be more appropriate, to ensure valid responses.

The difficulties in coding responses and analysing data associated with open-ended questions were accepted.

General information about the amount and nature of product elimination was sought by asking open ended questions about the number of items and ranges marketed by the company and the number of these that were eliminated in the last five years (Qs 12, 13, 14). The definition of "items" and "ranges" was developed to be easily identifiable, and was pretested with success. Open-ended questions were asked so that percentages could be calculated with the computer, giving less variability in responses.

The relative importance of recognition criteria used in the company was measured using the same scale as for question 6. This scale was also used to measure the relative importance of implementation factors (Q17).

The frequency with which alternative implementation strategies were used was measured with a verbal frequency scale (Q16). The scale had five points, where one indicated that a strategy was never used and five indicated that it was used very often.

Section III of the questionnaire concentrated on a specific product recently eliminated. General information was collected about the product using a mix of dichotomous, fixed alternative and open questions. The identification of the product's stage in the plc was aided by a diagram that pretested well (Qs 31 to 39).

The relative importance of the various precipitating circumstances in triggering the deletion was measured using the same scale as in questions 6 and 17 (Q40). An open-ended question was asked to indicate the average time management are aware of a problem, before tackling it (Q41) and another dichotomous question probed whether or not the product should have been eliminated sooner (Q43).

Respondents were asked to indicate the extent to which alternative methods of revitalisation were considered (Q45). Again a five-point scale was used where one indicated that the item had been considered "to a great extent" while nine indicated it had been considered "not at all". The items were taken from the interview transcriptions, while the scale values, placed at equal intervals of two, were not labelled. Little guidance or precedence was available regarding the semantic designations suitable for the dimension under study. The same scale was used in question 47 to measure the extent to which the evaluation factors were considered.

Open questions were used to examine which, if any revitalisation methods were adopted and which, if any, evaluation factors had caused deferral of a decision to eliminate (Q46).

The final questions in Section III were related to the implementation of the specific product. A fixed-alternative format was chosen to check which method was used (Q51). Open-ended questions were set to gain details of the timing of the deletion.

Section IV was not relevant to the work in hand.

4.5.2.2 The Implementation of the Mail Survey Stage

Earlier in the chapter (paragraph 5.1.2.1) a conceptual population was described to meet the cross-sectional, descriptive objectives of the study. This conceptual framework was used for both the interview and mail survey stages of the study. That the operational population could be conceived so widely is due to the opportunity of executing the mail survey as part of the wide-ranging and adequately funded study at Strathclyde University.

The Sample Frame

The sample frame and sample used for our investigation was by necessity, that designed for Project Dropstrat. The population, to be stratified by industry and size, was further restricted to those companies found in the 1985 editions of Kompass and Dun and Bradstreet's Key to British Enterprises. Very diversified companies that appear in more than one of the pre-selected industry categories were admitted to one industry category only in the frame. Within an industry category, firms appearing under more than one SIC code were reduced to one entry in the frame. These measures were taken to ensure that any one company would not be included twice in the final sample, and that no one company had a measurably greater chance of inclusion in the sample. Thus, the problem of double-entry inherent to the frames was tackled.

A second problem with these frames is that of self-selection, and this is considered to be unavoidable, given the widely-acknowledged paucity of adequate representative frames for business research (Chisnall 1986, Pearce 1966).

A third problem is that of the frames containing "top" companies. While this limits the frames' representation of the smaller manufacturing enterprise, it is felt that these companies would not, in the main, enter our conceptual framework which does not include companies employing fewer than 100 people.

The fourth and final problem encountered when using this sample frame was in detailing precisely the population in terms of the size of the company. Difficulties arose in two ways. Firstly, not all companies listed give details of the numbers employed and, secondly, the way in which the directories are arranged is such that it is impossible to find a breakdown within each industry sector, of the size of the company. The latter is given in the body of the Directories. These factors impinged on the very nature of the sampling procedure to be adopted. If a strict random sampling technique were to be used, then the number of companies listed - approximately 4000 would have had to be reorganised into their appropriate "cells" according to industry and size. Given the time constraints imposed by Project Dropstrat, this operation was impossible. The only practical alternative, therefore was to check the company industry and size, and where they fitted within the parameters of our conceptual population, the company was included in the request sample.

Problems such as these were thought to be of sufficient magnitude as to warrant caution especially with regard to the generalisation of results. Additionally, future researchers should be made fully aware of the practical constraints and compromises in carrying out research of this kind. This said, it is important to emphasise the lack of available alternatives. In public and university libraries industry-specific directories (like Jordan's Industry Surveys or ICC Business Ratio Reports) are rarely, if ever available in sufficient numbers to cover the breadth of manufacturing industry of interest to Project Dropstrat. The use of commercial telephone directories is impractical as too little information is given to ensure that sampling units in the frame are of relevance to research objectives.

The Sample and Response

As Table 4.8 shows the final request sample of 903 companies, stratified by industry category and size. The sample was chosen in such a way as to have the number of medium and large companies

roughly equal to the number of small companies. Had the companies been randomly selected from the industries with no regard to size, there would have been too few medium and large companies in the final sample for data analysis. A cursory glance at various Business Monitors such as PA 1002 or PO 1007 evidences the preponderance of small companies in manufacturing industry. In addition, Avlonitis (1980) study in the engineering sectors of manufacturing industry shows that in the population small firms outnumber medium-sized and large firms by a factor of 1:6 and 1:7 respectively.

It was felt prudent to select a greater proportion from the more heterogeneous sampling units, which in the case of product elimination decision-making was considered as the medium-sized and large companies (Ferber 1949).

Table 4.8 Request and Response Sample for the Mail SurveyIndustry Categories

Size	Fast-Moving					
(No. of EMPLOYEES)	Consumer Goods	Industrial Supplies	Consumer Durables	Consumer Components	Capital Equipment	
Small	M = 103	M = 105	M = 114	M = 99	M = 117	M' = 538
(100-499)	N = 15	N = 12	N = 19	N = 20	N = 18	N' = 84
employees	R = .15	R = .11	R = .17	R = .20	R = .15	R' = .16
Medium	M = 41	M = 36	M = 30	M = 31	M = 37	M' = 175
(500-999)	N = 9	N = 107	N = 8	N = 6	N = 7	N' = 40
employees	R = .22	R = .28	R = .27	R = .19	R = .19	R' = .23
Large	M = 48	M = 29	M = 31	M = 38	M = 44	M' = 190
(over 1000)	N = 8	N = 10	N = 9	N = 9	N = 9	N' = 42
employees	R = .17	R = .24	R = .29	R = .24	R = .20	R' = .22
	M'' = 192	M'' = 170	M'' = 175	M'' = 168	M'' = 198	M''' = 903
	N'' = 32	N'' = 29	N'' = 36	N'' = 35	N'' = 34	N''' = 166
	R'' = .17	R'' = .17	R'' = .21	R'' = .21	R'' = .17	R''' = .184

M = Stratum Request Sample Size

N = Stratum Response Sample Size

R = Stratum Response Rate

The total request sample required by Project Dropstrat was to be approximately 900, with the 5 industry strata to be represented equally. Sample selection was carried out with the target of 180 companies in each industry category, approximately half of which were to be small and the other half, medium-sized and large.

Securing the Response

The major problem associated with mail questionnaires, that of non-response was discussed earlier in the chapter (paragraph 4.4). As stated previously it is not so much the number of cases in the final sample that is important, but the extent to which the final sample differs from the request sample. The fact that some respondents elect to respond to a questionnaire while others will not, suggests there are differences between the two groups.

Moser (1967) details three major influences on the response rate. They are the sponsorship of the research, its subject matter and its population. While our interviews gave good reason to believe that the subject was of interest to the business community, and we were fortunate in being attached to a well-respected Marketing Department in a University renowned for its close links with industry, somewhat low response rates are common in the business population (Hise and McGinnis 1975 with 19%; Hansen 1980 with 14% - 22%; Futrell and Varadarajan 1985 with 21%; Jobber and Sanderson 1985 with rates of between 13% to 27%).

This said, it is important to take measures, not only to reduce non-response, but to evaluate sources of non-response error.

A copious body of research exists which has investigated various tactics for increasing response rates on mail surveys some of the more recent findings of such research are summarised in Table 4.9.

Table 4.9 Tactics for Increasing Response Rates

Author	Tactic to be tested	Was an increase in response rate observed?
Kimball (1961)	Personalisation of salutation against Dear Sir (control)	No
	Monetary incentive 10 cents coin against control	Yes
	Return envelope: Airmail postal permit against air mail stamp	Yes
Watson (1965)	Follow up Technique: post card and two-day follow-up against control	Yes
	Personalisation: personal salutation against Dear Sir (control)	No
	Monetary incentive 25 cents coin against control	Yes
Simon (1967)	Personalisation: individually typed against mimeographed letter	No
Futrell (1981)	Degree of anonymity: anonymity and confidentiality against anonymity only and against control	Yes
Jobber & Sanderson (1983)	Notification of survey prior to sending out questionnaire	Yes
	Colour of paper blue against white (control)	No
	Offer of results, thus not maintaining anonymity against control	Yes
	Follow-up techniques: letter and questionnaire	Yes
Childers, Pride & Ferrell (1980)	Types of appeal in covering letter (a) egoistic against social utility (control)	No
	(b) altruistic against straight control	No

Author	Tactic to be tested	Was an increase in response rate observed?
Kerin & Harvey (1976)	Types of appeal in covering letter altruistic against egoistic (control)	Yes
	Personalisation: individually typed against a mimeographed form letter (control)	Yes
	Return envelope: stamped against unstamped (control)	No
King & Wilson (1978)	Personalisation a) personal salutation, name and address on covering letter and all individually typed, against mimeographed cover letter (control)	No
	b) as above with no address on covering letter and mimeographed letter and signature	No
Futrell & Hise (1977)	Anonymity: anonymous against control	Yes
	Deadlines: one day deadline against control	No
Futrell & Swan (1977)	Personalisation: signed against unsigned (control)	No
Futrell, Stem & Fortune (1978)	Personalisation: signed against unsigned (control)	No
Childers & Ferrell (1979)	Questionnaire issues a) the smaller A4 size of paper against the larger foolscap paper	No
	b) printing on both sides of the page against printing on one side of the page (control)	No
Faltheic & Carroll (1971)	Questionnaire issues: closed questions against open ended questions (control)	Yes
Imra (1967)	Non-monetary incentives: inclusion of a small pocket knife against control	Yes
Kerin, Barry, Dubinsky & Harvey (1981)	Non-monetary incentives: offer of results with anonymity maintained against control	No
Thompson (1984)	Non-monetary incentives: a) felt-tip pen (not sent to named individuals) against control	Yes
	b) felt-tip pen (sent to named individuals) against control	Yes

Conventional wisdom suggests that the following issues should be addressed when implementing a mail questionnaire survey (Chisnall 1986; Scott 1961; Adams and Schvaneveldt 1985; Dexter 1970). A covering letter explaining the research objectives and, where possible, sponsorship should be addressed personally to the respondent. A stamped addressed envelope should be provided. The layout of the questionnaire should be clear; easy to follow and to read. A follow-up letter and questionnaire almost always helps to increase response rates. While there is little conclusive evidence to suggest that the length of the questionnaire affects the response rate, except perhaps at the extremes (Baker 1971; Champion and Sear 1971; Mason, Dressel and Bain 1961) it should be recognised that business executives are likely to have little time to spend on a protracted document.

Project Dropstrat, upon which the current research depended, used several methods to increase the response rate. These included:-

- 1) covering letter emphasising:-
 - a) the importance of the senior executive's knowledge (egoistic appeal);
 - b) an admission that the seriousness of the endeavour would require "more than just a few minutes";
 - c) the claim that only a limited number of companies had been contacted and that cooperation was vital to the success of the study (help the sponsor appeal)
- 2) individually-printed and signed letters, addressed directly to the person identified as the company's Managing or Marketing Director (See Appendix 5)
- 3) a promise of anonymity and confidentiality

- 4) an offer to supply the respondent with a copy of the final report
- 5) an addressed, "Freepost" return envelope
- 6) a follow-up package consisting of an appeal letter, a second questionnaire and "Freepost" envelope were sent out (See Appendix 6).

All communications were printed on University of Strathclyde headed paper to add credibility to the work. Due to the size of the sample and concomitant costs, no attempt was made to contact the respondents in advance, although this has been shown to enhance response rates in mail surveys (Jobber and Sanderson 1985). For the same reason, no monetary incentive or any other gift was offered to respondents, a technique which has met with considerable success (IMRA 1967, Thompson 1984).

Response Sample: Description and Appraisal

The initial mailing and follow-up efforts generated a total of 181 responses, a response rate of 20 per cent. Fifteen of these responses, however were excluded from the analysis because of a) excessive missing data, as in eleven cases or b) late arrival, as in four cases. The effective sample size therefore was 166 companies, which constituted a response rate of 18.4 per cent.

As Table 4.10 shows, the first mailing generated 95 responses (57%) and the second 71 responses (43%).

Table 4.10 Responses in each mailing

Mailing	Number of Responses
1st mailing	95 (57%)
2nd mailing	71 (43%)

Looking at the distribution of industries represented by the final sample, Industry C, Consumer Durables and Industry D, Industrial Components have the highest response rates, while Industries A, B and E share a response rate of 17 per cent. (See Table 4.8) Again, from Table 4.8, it can be seen that the lower response rate was from small companies (16 per cent) while the response rate for medium-sized and large companies was 23 per cent and 22 per cent respectively.

As well as the non-usable responses described above a number of companies wrote to the researchers to decline to participate.

Their reasons are below:-

Simple declination -- no reason	14
Respondent away on business	2
Time constraints	16
Organisation too diversified to answer questionnaire meaningfully	10
Company no longer manufacturing	5
Company policy not to participate	2
Company has been taken over	3
Addressee has not been involved in eliminating products	2
Questionnaire too long	4
Contacted has no responsibility for the decision	2
Respondents felt they could not help	2

Given the length of the questionnaire, 18 tightly-packed pages, with a total of 66 questions covering some 300 items, a higher response rate was improbable. Further, it is the author's opinion that the lengthy covering letters (See Appendices 5 and 6) is not the most effective in encouraging response. A direct plea for help seems to generate goodwill in the experience of fellow students and colleagues.

In addition to the length of the test instrument some of the information requested by Project Dropstrat was detailed and confidential.

This said, the response rate achieved is consistent with similar published research that has investigated commercial populations. (Hansen 1980, Dubinsky and Ingram 1982, Jobber and Bleasdale 1987). Further, it gave the author the opportunity to study a neglected area of marketing management which could potentially clarify the issues and give future research a clearer focus.

It was decided to investigate potential sources of non-response bias. As the response rates among size categories and especially industry categories were rather low, it was unlikely that these factors, company size and industry classification were sources of bias. Further the X^2 statistic was calculated for variation among the stratum response sample sizes (n) in Table 4.8. The X^2 statistic is .42 with 8 degrees of freedom and is significant at the 0.91 level. Such information indicates that neither company size nor industry classification is a source of non-response bias.

A second objective way of evaluating non-response bias is to assume that some differences exist between early and late respondents. Clearly, the two can be treated as discrete categories and the differences in their responses to questions can be compared and analysed.

A number of questions were selected to see if the early responses varied significantly from the late responses. Answers to questions 5b (a to i) 15 (a to o) 40 and 47 were converted to means which were then compared using the non-parametric difference-between-means test, the Mann-Whitney U-Test, a statistical procedure contained within the SPSS^x package, which computes the mean ranks and their levels of significance. Information about SPSS^x and the statistical techniques is given in the next chapter which discusses issues in analysis. The 0.10 level of significance was selected.

The means for each question are shown for both early and late respondents in Table 4.11, along with the level of significance. Where the computed significance is greater than 0.10 then the null hypothesis, $H_0 : X_1 = X_2$, that the means of the two samples are the same is accepted.

Table 4.11 Differences between early and late respondents

Question Number	Early Respondents' Rank Mean	Late Respondents' Rank Mean	U Value	Significance
5a	71.7	65.9	2094	.34
b	70.4	67.8	2238	.69
c	69.7	68.3	2276	.82
d	66.8	70.8	2189	.53
e	64.3	71.9	2037	.23
f	67.9	69.8	2262	.77
g	66.2	71.2	2153	.44
h	61.9	74.8	1887	.05
i	65.6	71.7	2118	.32
j	69.4	68.6	2300	.90
15a	86.1	78.7	3027	.30
b	80.4	87.6	3080	.29
c	84.1	81.4	3216	.70
d	79.3	87.9	2978	.23
e	79.4	84.3	3062	.49
f	81.5	84.9	3186	.63
g	82.1	84.2	3236	.76
h	78.7	87.4	2941	.22
i	81.6	82.4	3198	.91
j	84.7	81.8	3258	.69
k	79.4	82.0	3002	.72
l	82.4	78.9	2997	.61
m	83.7	83.2	3353	.94
n	83.5	82.2	3273	.85
o	87.1	77.3	2932	.18
40a	81.1	77.2	2896	.46
b	78.6	79.5	2981	.90
c	80.2	78.4	2977	.75
d	77.7	81.8	2888	.56
e	84.9	72.1	2552	.07
f	79.3	78.5	2975	.91
g	85.5	71.2	2495	.03*
h	77.9	81.6	2907	.60
i	81.2	75.9	2811	.45
j	79.9	77.7	2921	.76
k	80.1	78.7	2995	.84

Question Number	Early Respondents'	Late Respondents' Rank Mean	U Value Rank Mean	Significance
l	81.2	75.6	2805	.46
m	80.5	78.1	2956	.73
n	79.6	78.1	2958	.76
o	83.6	73.8	2669	.14
p	80.7	77.7	2933	.60
q	81.4	76.8	2896	.41
47a	77.1	80.2	2865	.61
b	75.4	82.5	2708	.31
c	78.4	78.5	2977	.98
d	77.4	79.9	2887	.73
e	73.6	84.9	2547	.11
f	81.8	74.1	2685	.24
g	76.3	81.3	2792	.48
h	79.1	77.4	2930	.84
i	77.7	79.5	2913	.78
j	76.9	80.5	2841	.60
k	78.0	79.1	2937	.86
l	77.7	79.5	2911	.79
m	78.4	78.5	2981	.99
n	78.1	78.9	2948	.90
o	80.4	75.9	2807	.52
p	76.6	80.9	2817	.53
q	73.0	85.7	2496	.07*
r	78.6	73.3	2971	.96
s	80.9	75.3	2768	.42

Of the 56 questions shown in the table in only two cases could the null hypothesis be rejected, suggesting that differences between early and late respondents are minimal.

The desirable course of action, is of course to contact non-respondents and ask some key questions which may reveal a difference in product elimination behaviour. Obvious sample questions in this case were Q12 and Q14 which would give an indication of the amount of elimination being carried out in non-responding companies. The time schedule for Project Dropstrat did not allow for this.

4.5.2.3 Validity and Reliability

As has been previously mentioned, the co-ordinator of a mail survey must address the issues of validity and reliability.

Validity is concerned with measuring what we think we are measuring, and is generally composed of face, content and construct validity.

Face validity is the most common yet least scientifically sound form of validation. It is epitomised by the question "Does the assessment device appear to measure the subject matter under consideration?" (Adams and Schvaneveldt 1985). However, what a device appears to measure from the point of view of one person might not be the same as for another. In the context of the current research it is important that the assessment device appears to measure the same thing, both for investigator and respondent. Given the development of the questionnaire from the transcripts of the interviews and its pretesting among business people, the researcher felt confident about the face validity.

Content validity addresses the question, "does the assessment device adequately measure the major dimensions of the behaviour under consideration?" In other words, it is the thoroughness of the device which is of interest: Do the questions asked allow complete and representative information about those aspects of product elimination behaviour that are of interest to the research to be given? These questions were addressed through the interview stage where respondents were given free reign to describe the issues of importance as they saw them. It is through their observations and suggestions that the questionnaire was largely developed. Secondly, during the pre-testing of the questionnaire an evaluation of content validity was made. Construct validity seeks to assess whether or not the test instrument measures the construct it purports to measure. An example given by Adam and

Schvaneveldt aids understanding of this notion: "if a scale purports to measure creativity how can we be sure that it does not measure some other, related phenomenon?" (p84). In general, this is tackled by measuring inter-relationships in a measuring device and relating these to some theoretical assumptions and models.

In the current study the questionnaire results were judgementally analysed for

- a) logical patterns and consistency
- b) consistency with related findings
- c) consistency of results with theoretical expectations.

As mentioned earlier, the reliability of the test instrument in this research, its consistency, is gauged through the replication of previous work with which the findings can be compared, and the precision and clarity of question wording and instructions.

4.6 Limitations of the Methodology

Throughout our discussion of research methodology we have sought to illustrate the pros and cons of the various methods and to highlight the specific problems and pitfalls in the chosen method. Taking the research method as a whole, the following limitations should be borne in mind.

1. As both the qualitative and quantitative stages of the research are, in fact surveys, the research suffers from the possibility of non-response bias. Although we have attempted to locate sources of bias between those in the population who were sampled and those who were not, we must state that such efforts are confounded by the lack of precise information about the population and the lack of documented sample frames.

2. Survey research is plagued by the whims of self-reporting. At both stages of the current study, the researcher was dependent upon the vagaries of interpretation, memory, self-observation and the eagerness of the respondent to please. Although we have described the ways in which these problems were addressed, we would contend that avoiding all of these problems given the subject matter and the class of respondents is unlikely.
3. Survey research is inherently obtrusive and the potential influence of either the interviewer or the questionnaire must not be ignored. Typically, such influence can introduce systematic error which limits the validity and reliability of the work. While several indirect methods and checks were used to gauge validity and reliability, the nature of measurement scales used in the mail survey precluded the use of any direct means of assessing their validity. In addition, the conceptual framework, which is needed to conduct a thorough and parsimonious investigation of complex behaviour, will almost inevitably bias both the interview schedule and the mail questionnaire. Results and findings should therefore be discussed and evaluated by people whose frames of reference are different from the author's.
4. The research methodology does not embrace the problem of what should be done to detect and eliminate a product effectively. Instead, it investigates a number of specific situations which are expected to influence the nature of the process, thereby providing a framework which might help practitioners analyse and structure their decisions, without claiming to account for all contingencies and outcomes.

Despite these limitations and problems which have been highlighted throughout the chapter, it is felt that the anatomy of the product elimination decision will be described and explained in terms of important company and product-specific influences in a variety of British manufacturing companies.

At the same time the reliability of the methodology can be assessed by comparing the findings to those of previous work.

The study further adds to our understanding of product elimination decision-making by describing these decisions in three industry sectors not yet researched: fast-moving consumer goods, consumer durables and industrial operating supplies.

CHAPTER 4

REFERENCES

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CHAPTER 5

Issues in Analysis

5 Issues in Analysis

5.1 Introduction

In the previous chapter, the issues, problems and methods of data collection were discussed. The focus of this chapter is the issues, problems and methods of analysing the data, once collected. While the chapter is quite brief, it was felt that the presentation of the interview and mail survey findings would be less laboured and complicated by cumbersome discussion of measurement and analysis techniques.

A short description is given of the analysis of the interview responses, but because of the complexities of quantitative data analysis, more time is spent on the analysis of the mail survey data.

5.2 Analysis of the Interviews

While there are several texts dealing comprehensively with quantitative data analysis - and many of these are marketing research texts - there is a notable shortage of practical advice on qualitative data analysis:

"A few years ago, an examination of several well-respected textbooks on field methods found that less than 5-10 per cent of their pages were devoted to analysis (Sieber 1976)"

Miles and Huberman (1984) p 16

Indeed, this problem is exacerbated by the tendency to consider qualitative data analysis something of an art, and to stress the importance of researchers' intuitive insight (Patton 1986). Further, since analytical methods are rarely reported in any detail, there is very little advice for newcomers to follow. A final, general consequence of all this is the fact that the validity of qualitatively-derived findings is seriously in doubt (Dawson 1979, 1982, LeCompte and Goetz 1982). This said, it is to the work of Patton (1980) and Miles and Huberman (1984) that the researcher looked for guidance in analysing the interview findings.

As mentioned in the previous chapter, the interviews were tape recorded.

"A tape recorder is part of the indispensable equipment of evaluators using qualitative methods. Tape-recorders do not 'tune out' conversations, change what has been said because of interpretation (either conscious or unconscious), or record words more slowly than they are spoken. In addition to increasing the accuracy of data collection, the use of a tape recorder permits the interviewer to be more attentive to the interviewee".

Patton (1980) p 247.

All the tapes were transcribed fully, which according to Patton (1980) yields the most desirable form of data, despite the time and/or expense that transcription may entail. (Future students and researchers should count four hours to transcribe one hour of tape.) Once the transcripts were ready, a choice had to be made which would impinge upon both the analysis and the presentation of the data. The choice was between using a "case" analysis and presentation or a more aggregate issue-by-issue presentation. Within these two broad classifications (also known as within-site and cross-site analyses) the emphasis is on classification of the raw data. Without classification there is chaos.

Yet there is no one correct way of organising analysing and interpreting qualitative data. Assembling the data by specific cases permits an in-depth study of the cases. The case record must include all the information needed for subsequent analysis, but organise the information at a level beyond that of the raw case data. Both classification and organisation of the raw data are required before the assembly of the case is complete, yet the case must be thorough and comprehensive in its descriptions:

"Thoroughness also implies that every phase of the problem must be studied and that it must be approached from every possible angle".

Jocher (1928/29) p 205

The emphasis of the case analysis is to describe and analyse what has happened in a single, bounded context.

On the other hand, where there is a need to verify that events and behaviour are not merely the result of one idiosyncratic setting, researchers are turning to "multisite, multicase designs" (Miles and Huberman 1984, Louis 1982). Indeed, systematic comparison of several groups is the essence of the argument formulated in The Discovery of Grounded Theory (Glaser and Strauss 1967). As with the case approach, there is a need to devise a system of classifying the raw data. Miles and Huberman (1984) propose several kinds of matrices to help this process.

In the current study we opted for the more aggregate approach on three grounds. Firstly, with 31 companies interviewed and a wide breadth of issues to be covered, case approach would have been much longer than an aggregate approach. Secondly, the length of the cases and amount of data presented would have made the identification and presentation of patterns and trends rather confused and confusing. Third, it was felt that the flavour of the case approach could be partially captured by reporting the individual product deletion within the framework of the aggregate findings.

Opting for the aggregate approach meant that great care had to be taken to avoid too much researcher selectivity and subjectivity contaminating the reporting. Accordingly, under separate headings which related to the structure of the interview schedule and so to the research objectives, the opinions of the respondents were written down. Where no opinion on an issue had been expressed, this too, was noted. This approach follows that described by Miles and Huberman (1984) as a "site-ordered descriptive matrix".

A second phase in collating the interview data was, for each heading, to take all the various responses and eliminate the duplication. Then the companies could be assigned to the responses they gave. This second phase resulted in an extremely useful summary sheet of "who said what".

The 50 case histories that were generated using the second interview schedule were treated in a similar fashion, substituting the product for the company name. This resulted in a "conceptually clustered matrix" which, as Miles and Huberman (1984) explain is a way of organising the data of each case, clustering them around a few or several research questions so that meaning can be generated more easily.

This lengthy preparatory stage allowed some rigour and standardisation into the analysis of the interview data, although it is accepted that with qualitative data, the hazards of researcher involvement and interpretation cannot be escaped.

5.3 Analysis of the Mail Survey

5.3.1 Data Processing

Before we could proceed with the analysis, the completed questionnaires were checked to ensure they had been filled in correctly. This led to the exclusion of 11 questionnaires from analysis, which is not felt to bias the findings unduly since they were not concentrated in one industry or size category.

The remaining questionnaires' responses were coded onto University of Strathclyde Coding Sheets by the researcher (see Appendix 7) and entered into the computer by the Data Preparation Service. The actual analysis was carried out by the University of Strathclyde's Digital VAX Computer. The software used was the Statistical Package for the Social Sciences-X (SPSS-X).

SPSS-X is a system of computer programmes designed to help the analysis of social science research data. Its simple procedures provide for basic descriptive analysis such as frequency distributions and other one-sample tests of significance, as well as crosstabulation, correlation and analysis of variance. As these were the analyses required for the current research, there was little need to consider the other packages available.

SPSSX Inc have published a series of guides to the package and the statistics which the researcher found invaluable during the analysis.

5.3.2 The Analysis of the Data

As mentioned in the previous paragraph, the objectives of the research and the specific hypotheses tested during the mail survey required a battery of statistical models and tests that included frequencies, crosstabulations, correlations and analysis of variance (both 2 and k samples). The precise choice of procedures will be discussed in context in chapter 7. However, two overriding concerns are discussed below as they impinge upon the choice of analysis in all statistical work: levels of measurement and the normal distribution.

5.3.2.1 Levels of measurement - scale data

Stevens (1946) developed a typology of measurement levels which is central to the use of statistical analysis. The typology classifies measurement - and therefore data - into one of four categories: nominal or ordinal interval and ratio.

Nominal measurement

Nominal measurement, the most elementary level, classifies data in such a way that they cannot be ordered or numbered. Numbers are assigned to the data, but they do not have a numerical value. The number serves as a label or name (hence, "nominal"). Examples include, an individual's nationality, the sex of the individual, the clubs to which he or she belongs, all of which may be denoted by a number in order to be read by a computer. All information supplied to questions with yes or no as the possible answers, is nominal.

Ordinal measurement

In the words of Nie et al (1975) "where it is possible to rank order all of the categories according to some criterion, then the ordinal level of measurement has been achieved" (p.4). If, for example, we have 3 categories, a, b and c, and if it is possible to say that a is

greater than b, and b is greater than c, then ordinal measurement is justified. However, ordinal numbers indicate nothing more than rank. If we know a is greater than b, we do not know by how much. We cannot assume that because the numerals are equally spaced that the notions they represent are also equally spaced (Kerlinger 1973).

Interval measurement

With interval level measurement the distances between the categories are defined in terms of fixed and equal units. Numerically equal distances assigned to the categories represent notions that are equally spaced. Interval level measurement allows us to study the differences among values, but not their proportionate values. Thus, if the value of a is 3, b is 5, and c is 7, and if these values are true values (and not just numerical representations), then the distance between a and b and between b and c is equal. However, b is not twice as much as a.

In social research, it is very difficult to establish what constitutes a true interval measure. This topic is resumed later in this chapter.

Ratio measurement

Ratio measurement is the highest level, in that it has the qualities of the first three and an absolute zero that has empirical meaning. When we measure height or weight, for example, the existence of zero allows us to say that a woman of 8 stones weighs twice as much as a child of 4 stones. In terms of business research, profit, turnover, number of employees of a company are all ratio measures.

Each level of measurement has appropriate types of statistical techniques which can be used. These are summarised in Table 5.1.

Table 5.1 Types of Measurement Scales

Scale	Basic Empirical Operations	Typical Usage	<u>Typical Statistics*</u>	
			Descriptive	Inferential
Nominal	Determination of equality	Classification: Male-Female, Purchaser-Nonpurchaser, Social Class	Percentages Mode	Chi-square Binomial test
Ordinal	Determination of greater or less	Rankings: Preference data, market position, attitude measures, many psychological measures	Median	Mann-Whitney U, Friedman two-way ANOVA, Rank-Order correlation
Interval	Determination of equality intervals	Index numbers, attitude measures, level of knowledge about brands	Mean, Range Standard Deviation	Product-moment Correlation, T-tests, Factor analysis ANOVA
Ratio	Determination of equality ratios	Sales, units produced, number of customers, costs, age		Coefficient of variation

Source: Adapted from S.S. Stevens, "On the Theory of Scales of Measurement," Science, 103 (June 7, 1946), pp.677-680, in Tull, D.S. and Hawkins, D.I. (1980), Marketing Research: Measurement and Method p.232.

It is important to note, however, that the higher levels of measurements are suitable for statistical techniques used for lower levels of measurement. Thus, interval data can be subjected to tests such as rank order correlation. Ordinal data, however, cannot be subjected to Pearson's product-moment correlation.

The scales used in the current work are the horizontal numerical scale and the verbal frequency scale, both variations of Likert-type scales (See chapter 4).

It is common practice to treat such scales as being interval, although, strictly speaking, they belong to the ordinal level of measurement. (Kerlinger 1973, Albaum et al 1977, Tull and Hawkins 1980). Scanning recent research papers bears witness to just how acceptable this practice has become in marketing research circles (Droge and Brentani 1986, Spekman and Moriarty 1986). That this is so is unsurprising since the parametric tests that require interval-level measurement are, on the whole, more powerful than their non-parametric counterparts. This in turn means that where parametric tests are used there is less risk of type II error (rejecting the alternative hypothesis when it is true). Often, the use of non parametric tests may lead to a loss of information about relationships and a poorer understanding of the problem under investigation.

This is not to say, however, that the treatment of these types of semantic scales as interval measures and subjecting the resultant data to all kinds of parametric statistical analysis is accepted by all researchers. Indeed, recent correspondence in the Journal of the Market Research Society indicates that this issue is highly contentious. (Traylor 1983, Lawrence 1984, Rothman and Buck 1984).

Among researchers opposing this common practice are Henkel (1975) and Martilla and Carvey (1975), although the latter concede that there are often few alternatives. On the other hand, Labovitz (1967, 1970, 1971) has pointed out that, as most statistical techniques are not affected by small deviations from the interval requirement, one can proceed without loss in accuracy. His work is more recently corroborated by that of Albaum et al (1977) who compared the measurements of both Thurstone and semantic scales, concluding that the semantic scale was acceptable as an interval measurement device.

Given the contentiousness of the subject among researchers and teachers whose knowledge and experience are greater than those of the researcher, the treatment of the scales (with regard to parametric or non parametric statistical analysis) was approached with caution.

Indeed, the necessity for interval-level measurement is only one of several conditions which should be met before proceeding with the powerful parametric tests. A further condition is that the observations must be drawn from normally-distributed populations (Siegel 1956). Attention is now turned to this issue.

5.3.2.2 The Distribution of the Data

As stated above, the parametric test specifies certain conditions about the parameters of the population from which the sample is drawn. However, only rarely are these tested and, in general, consumers of research are expected to acquiesce to the assumption of normality. This practice was rejected for the current work whose exploratory nature necessitated a conservative attitude towards population distributions, measurement quality and the nature of the variables. Accordingly, scaled data was examined using the Kolmogorov-Smimoff one-sample test. This goodness-of-fit test can determine whether scores in the sample can reasonably be thought to have come from a specified (here, normal) distribution (Siegel 1956, Champion 1981). If the largest deviation between the observed cumulative frequency proportions and the expected cumulative frequency proportions (known as Kolmogorov-Smimoff D) is significant at the specified level, then the assumption of normality does not hold. Accordingly, in the current work, these instances triggered the use of non-parametric models. Having dealt with these overriding considerations, attention is turned to the analysis used to decipher the data.

5.3.2.3 Analyses Used

1 Frequency analysis

The first step in the data analysis was to examine the actual distribution of responses in terms of the alternatives offered by the questionnaire. The purpose of this was twofold. Firstly, it familiarised the researcher with the raw data and the patterns therein. Secondly, inspecting the measures of central tendency such

as the mean, median and mode, a picture of the most common, popular and important variables was obtained. These steps allow the researcher to keep sight of the broad issues, when delving further into the data.

2 Crosstabulation

According to Nie et al (1975) a crosstabulation is "a joint frequency distribution of cases according to two or more classificatory variables" p.218. In general, it is a common form of analysis that can be used with any kind of data to determine whether or not variables are related. The chi-squared (X^2) statistic is used to determine the existence of a relationship between two or more variables. This involves determining a level of significance for X^2 .

Essentially, the level of significance is the probability researchers assign to decisions made about the hypotheses they have tested. The probability refers to the amount of error the researcher is willing to accept in these decisions. If the level of significance is set at 0.05 (5 per cent), there is a 5 per cent chance that the researcher has made a mistake about the decision to accept the hypothesis. The level of significance is usually denoted as p , as in $p < .05$, which means "significant at the 5 per cent level".

As the X^2 statistic becomes distorted when calculated on very large or very small samples, it should not be used with either. Champion (1981) suggests 25 and 250 as lower and upper limits. Alone, the X^2 statistic only reveals whether or not variables are related. It does not tell us how strongly they are related. A measure of the strength of an association which can be used with categorical (nominal) data is Cramer's V. SPSS-X calculates Cramer's V, and an indication of the direction of an association can be gained by inspecting the arrangement of frequencies throughout the table (Champion 1981, Nie et al 1975).

In the current work, crosstabulation and the chi-squared statistic were used to investigate relationships among two or more variables where the measurement was categorical (nominal).

3 Correlation

As with crosstabulation and its associated statistics, correlation analysis helps the researcher determine whether or not two variables are associated. Bivariate correlation provides a single number (a correlation coefficient) which indicates the degree to which variation - or change - in one variable is related to variation - or change - in another (Nie et al 1975). In addition, the direction of the association is also indicated. A positive association occurs where, as X gets larger, so does Y; a negative association occurs where, as X gets larger, Y gets smaller. Correlation analysis is appropriate for ordinal and interval data. More specifically, both Spearman's and Kendall's rank-order correlation coefficients (r_s and tau, respectively) can be used to measure the degree of association between ordinally-measured variables, while Pearson's product-moment correlation coefficient (r), is used to measure the strength of relationships between two interval-level variables.

Correlation coefficients can range from +1.00, a perfect positive correlation, to -1.00, a perfect negative correlation. Very little indication is given as to what makes a "good" or "strong" relationship, as this will vary according to research design and objectives. The worked examples given in statistical textbooks result in correlation coefficients in excess of .7 (Adams and Schvaneveldt 1985, Champion 1981, Zaltman and Burger 1975). On the other hand, inspection of theses and research papers of comparable design to the work in hand, reveal greater concern with the statistical significance of the coefficient, than the size of the coefficient itself. (Baker 1971, Avlonitis and Boyle 1986).

However, any statistic can be significant without being strong or important, especially with very large sample sizes. The important point is that a correlation between the values of two variables is a fact. Whether it is regarded as strong, weak or satisfactory, is a matter of interpretation (Rowntree 1981). The level of significance chosen for the present study was .05 for correlation coefficients, to avoid commenting on too many spurious associations.

In the current work both parametric and non-parametric correlation analyses were used to measure the existence and strength of relationships between variables. Clearly, the parametric test was reserved for data which met the necessary conditions. Specifically, data had to be measured at least at the interval level drawn from a normally-distributed population.

One final caveat is offered in relation to correlation analysis: the appearance of an association between variables does not mean that a causal relationship exists between them. Although we are ultimately interested in establishing cause-effect relationships, this takes time and involves replications of research projects as well as repetitive tests of theory. The scope of enquiry of this study is limited to establishing which relationships exist, if any.

4 Difference between means and analysis of variance

Analysis of the differences in means from two or more subsamples (or two completely different samples) allows researchers to point out if the two subsamples are significantly different in the way they think or behave.

The researcher must choose the appropriate test of significance, which will depend on the number of subsamples being compared and the level of variable measurement. Where two subsamples are being compared, the parametric t-test for difference between means can be used. Where data do not meet the requirements for the t-test, the most stringent of which is that the samples be drawn from normal populations, the non parametric Mann Whitney U-test is the most powerful equivalent.

Where more than two subsamples are being compared, there is the parametric F-test and the non parametric Kruskal-Wallis one way analysis of variance.

In the previous chapter an example of the Mann-Whitney U-test was given, to test whether or not there were any significant differences in responses between early and late respondents (paragraph 4.5.2.2). As the distributions differed significantly from a normal population distribution, they did not satisfy the requirement necessary for the parametric t-test. The procedure for this statistical analysis was as follows:

- 1 A null hypothesis (H_0) and corresponding alternative hypothesis (H_1) were formulated. In this case H_0 was that the population means from which the samples were drawn were the same
- 2 A significance level for H_0 was chosen. As outlined previously, the significance level is the acceptable probability of rejecting H_0 when it is true. This was set at .10
- 3 The raw scores for the entire sample were rank ordered, and the ranking substituted for the scores. For each subsample, the rankings were added together and divided by the number of cases to give the mean rank. From this information the U statistic and its level of significance were calculated
- 4 Where the probability calculated at stage 3 was larger than the level of significance chosen in step 2 the null hypothesis H_0 was accepted. This occurred in all but 4 instances.

As this is the only example of comparing 2 subsamples in the study, discussion is curtailed here. For several research hypotheses, however, comparison of the behaviour of more than two subsamples was required. Two methods are available for scale data: the F-test and Kruskal-Wallis one way anova. In the case of scale data satisfying the requirements for the parametric test, the statistic computed in the analysis is the F value or F ratio. Researchers test the null hypothesis that the population means are equal.

The F value is simply the ratio of the variance between groups to the variance within groups. To test the hypothesis, if the computed F value is larger than the F value which corresponds to a previously - selected significance level, the null hypothesis can be rejected. One drawback of the F-test is that it does not reveal where significant differences between groups exists. It simply shows that a difference exists somewhere among the groups. There are, however, seven a posteriori tests or multiple comparison procedures that the researcher can choose from to locate which means differ significantly. A full discussion of the pros and cons is available in Winer (1971), pp.185-190. Their major differences, however, lie in the degree of conservatism vis-a-vis type I error (rejecting a true H_0). The Scheffé test is the most conservative, with Duncan's multiple range test and the Newman-Keuls procedures being less conservative.

For data that do not meet the requirements for the F-test, Kruskal-Wallis one way analysis of variance is appropriate. As an extension of the Mann-Whitney U-test, it evaluates the difference between three or more samples vis-a-vis the variables of interest. The raw scores are ranked across the groups and the H statistic is calculated to determine the difference among each sample's average ranks. The Kruskal-Wallis H-test is approximately 95 per cent as powerful as the F-test, but unfortunately, there is no non-parametric equivalent to the multiple comparison procedures described for interval data above.

Both parametric and non-parametric procedures were used in one-way analysis of variance, according to the level of measurement and normality of the distributions vis-a-vis a given variable. Throughout, a two-tailed test was used, at the significance level set at 10 per cent for the non-parametric test to compensate for its relative weakness in power efficiency.

CHAPTER 5

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