

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 2

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CHAPTER 6

Presentation of the Interview Findings

6. Presentation of the Interview Findings

The purpose of this chapter is to describe in some detail the data collected during the interview phase of the study.

The interviews were carried out to explore behaviour and to provide an insight into relationships that might exist among behavioural variables. Specific attention is paid to the influence of strategic planning and issues, product planning and the precipitating circumstances, on companies' elimination decision-making behaviour.

The interviews, which took a year to complete, yielded copious information. This chapter is therefore divided into seven descriptive sections and one concluding section.

Sections one to four deal with issues relating respectively to strategic planning, product planning, precipitating circumstances and identification of product elimination candidates. Sections five to seven deal with revitalisation, evaluation and decision-making and implementation. The eighth concluding section summarises the findings and details their implications for the hypotheses used to guide the mail survey stage.

Section 6.1 : Strategic Issues

6.1.1. Introduction

In Chapter Two of this work, the contribution of product elimination to company strategy and the strategic context of product elimination were theoretically described.

However, little research has been done on product elimination as a means of pursuing company objectives. The research in hand has therefore examined, not only the nature and scope of strategic planning in British Manufacturing Companies, but also the way in which it affects product elimination and the extent to which product deletion decisions are executed as part of overall product-market strategy. It is necessary, however, to begin with a general description of strategic planning in the sample companies.

6.1.2. Strategic Planning - An Overview

The researcher's opening gambit consisted of ascertaining whether or not the company formulated strategic or long-term plans. 25 of the 31 companies did so, and of the 6 who did not, 1 was a large company. Table 6.1.1 shows the breakdown of all 31 companies according to industry, while Table 6.1.2 illustrates the length of time covered by these plans.

Table 6.1.1: Strategic Planning in the Sample Companies

Industry	A	B	C	D	E	Total
Companies Formulating Strategic Plans	5	3	7	4	6	25
Companies not Formulating Strategic Plans	2	-	1	3	-	6

N = 31

Table 6.1.2: The Time Horizon of Strategic Plans

Industry						
Strategic Horizon	A	B	C	D	E	Total
3 Years	1	2	2	-	2	7
4-5 Years	4	1	5	4	3	17
More than 5					1	1

The most popular time horizon for strategic plans was five years. All respondents indicated that these plans were "rolling plans". A rolling plan is one which is reviewed, appraised and reformulated every year: it discards the first year, which at the time of review is approaching its end, and it reaches one year beyond its current limit, thus preserving its five year span. A second feature of such plans in the 25 companies is the pattern of "diminishing quantification", where there is detailed reference to objectives and strategies in the first year, and, as subsequent years are planned, there is less emphasis on quantification and more on narrative. The Sales Director of a small company manufacturing flexible tubing (Company D3) explains this point concisely:

"We have a five-year rolling plan...The first year of the plan is the year we're currently in and is a forecast of what we expect to end up with. Dealing with the second year gives us an opportunity to modify figures of growth into years four and five but they become less and less meaningful...What we are really saying is that we expect the business to move forward into the following markets because of factors x, y or z".

Sales & Marketing Director D3

Similarly, the Marketing Director of a large company manufacturing milling machines explains the diminishing quantification:

"Corporate objectives are quantified, but it's more a statement of general intent. We do quantify them, but more as a formality. The statement of intent is the important part of it. For example, a corporate goal is to double turnover by the end of the five-year planning period. That is as far as we'll go".

Marketing Director E1

A third common feature of strategic plans in the sample companies was that they often related, not to individual products, but rather to product groups or categories. The Marketing Director of a small company manufacturing cakes and biscuits express a common opinion:

"There's very little detail about individual products, there is no collection of specific product data that we may be launching in the next year, let alone in five years' time. Nor for that matter is there any detail about the ones that will be coming out of the range. There are, however, details about broad categories of product. For example, we often talk about 'sponges' as a sector, and ask ourselves in the long term whether we should be in or out".

Marketing Director A2

Of the six companies who reported not to have a strategic plan, two seemed to have an impression of the direction in which they wanted to go in the long term; they appeared to exhibit the "pattern of diminishing quantification" in a somewhat extreme form, where the latter years of the plan were considered, rather than committed to paper. The Marketing Manager of one manufacturer of kitchen and bathroom suites (Company C5) said:

"We have a detailed plan for the year ahead - we're projecting X% growth due to major investment in a new factory. We do try and think three years ahead - but it's an industry that is changing very rapidly and on top of that the life cycle of any range of products is only about three years at the moment".

Marketing Manager C5

Of the remaining four companies who did not carry out long-term planning, three were extremely small, and believed their comparative advantage to lie in an ability to be flexible and respond quickly to unforeseen opportunity. The Managing Director of a small company manufacturing pet food claims:

"We are opportunists. It's up to our managers to go around with their eyes open to find out what the opportunities are. In our business you have to sell the difference, so each manufacturer tries to make his products a little bit different when the need arises".

Marketing Manager A6

The Managing Director of a small company manufacturing capacitors also makes the point:

"In the company, new products come about through close relations with our customers. This we pursue. The reputation of being able to react quickly to enquiries for special types of capacitors attracts enquiries".

Managing Director D1

6.1.3. Strategic Planning Issues

Careful scrutiny of the interview transcriptions revealed ten distinct strategic planning issues or strategic planning variables and they are presented in Table 6.1.3. These issues have been categorised, according to their scope, into one of the following areas: Growth Issues, Finance Issues, Marketing Issues. Each variable is now presented, discussed and reviewed with regard to how they may relate to the decision to withdraw a product from the range.

Table 6.1.3 Strategic Issues in the Sample Companies

STRATEGIC VARIABLES	(A)	(B)	(C)	(D)	(E)	TOTAL
<u>GROWTH</u>						
Future sales Volume	A2 A3	B2 B3	C1 C2 C6 C8	D3 D7	E1 E2 E4 E6	14
New Product Development (NPD)	A2 A3	B2	C3 C4 C6	D2 D3 D5	E4 E6	11
Forecast of techno- logical change	A5	-	C3 C4	D2 D5	E6	6
Mergers/Acquisitions	-	-	-	D2	E3 E5	3
<u>FINANCE</u>						
Profit	A2 A4 A5 A7	B1 B2 B3	C2 C3 C4 C6 C7	D2 D3 D5 D7	E3 E4 E5 E6	20
Long-term investment	A2 A3 A4 A5	-	-	D2	E3	6
Cash flow	A4	B1	-	D2	E3	4
<u>MARKETING</u>						
Definition of company's product-markets	A3	B2 B3	C7	D2 D3 D7	E1 E2 E3	10
Company image/ reputation	A2 A3 A4	B3	C2 C3 C6	-	E3	8
Forecast of market size and share	A3 A4 A5	B2 B3	C1 C3 C4 C7	D5 D7	E1 E3 E5 E6	15

6.1.3.1 Growth Issues

Future Sales Volume

There were four areas of strategic concern which appeared to pursue the idea of growth. The first of these, "future sales volume", was usually expressed in terms of an objective to increase or maintain given levels of sales volume. As has already been pointed out, figures were not usually applied to specific products, but rather to whole categories of product. Below is a selection of comments made by respondents, revealing the scope of the strategic variable "future sales volume":

"The objective of the corporation is a figure of 20 per cent growth per annum. So when it comes to the five-year plan, which we do every year, we're constantly matching this growth objective, which boils down to how many million pounds worth of business we do each year. There's a constant pressure to keep the dollars up".

Product Market Manager E6

"Our five-year plan is a statement of corporate objectives...for example we'll say we want ten per cent growth in sales and we'll say how we want to get it - from a change in distribution or packaging investment".

General Manager A3

"Overall, we aim to have a steady growth of five per cent a year in real terms. I generally work on five per cent volume growth".

Marketing Director E2

"In the company we have a five-year plan, which is a financial plan, used as a framework for growth. Our major plan objective is growth in turnover".

Marketing Director C8

"We have long-term objectives, we have a five-year plan. It covers sales growth and profit growth; within that a mix of what we're going to do to achieve those figures".

Marketing Director A2

None of the companies' strategic plans were unidimensional. The average number of strategic variables cited by companies was three; none had fewer than two, and one company cited as many as eight.

"Future sales volume" often appeared accompanied by market share objectives, profit objectives as evidenced by the following statements:

"Our objectives are specified. We aim for 30 per cent return, and overlaying that we have targets on sales and market share".

Marketing Director D5

"Growth in sales and profit are projected on a five year basis and in the year plan".

Product Manager C2

"Our quantified strategic objectives go right down to order input [sales], income, profit, people and market share".

Marketing Director D7

"Our basic company objectives are generally expressions of desired growth: market share, sales volume. These are supported by mini-objects".

Managing Director C1

The importance given to all the constituent variables of the strategic plan varied. Often variables were complementary, and any relationship among them would fluctuate, given the specific circumstances of the company and its product ranges. Often "sales volume" and "profit objectives" would shift according to the specific characteristics of product category, or according to what the company was trying to achieve in a particular product-market.

"Growth expressed in sales volume is our primary objective - but in the spring-wound category [clocks]* we're projecting a market decline, so we're hoping to achieve a greater market share. We are, of course, developing and marketing quartz [clocks] products to replace the old spring-wound but we'll milk them to the bitter end. We do realise that at some point volume alone will not justify profitable manufacturing and we have an idea when we'll drop".

Product Manager C2

"The statement of intent is the important aspect of the plan. Broad objectives however will be broken down. I will say I want to increase market share of a particular product from 60 per cent to 80 per cent to help achieve this".

Marketing Director E1

* Square brackets denote the author's addition

"Every year we develop a five year marketing strategic plan. Within that we're looking at existing products, the marketplace and its requirements. Our most basic objective is profitable growth - although growth in sales may have to be accepted without the same profit growth depending on economics, competition etc".

Marketing Director E4

From Table 6.1.3, it can be seen that not all companies specifically mention "future sales volume" as a strategic consideration. Several reasons can be forwarded for this, and it would be erroneous to conclude that these companies were not concerned with the future level of sales. Firstly, some companies concentrated their thoughts on future sales through the budget or operational plan rather than at the broader strategic level. This will be more fully developed in the section dealing with operational planning, but by way of illustration, the procedures of a small company making printed circuit boards are quoted:

"The budget starts with the calendar and covers orders on hand - the backlog, orders in - the sales profile, cost and markup, shop output value or finished goods stock; and then we have the actual products we're going to sell".

Sales and Marketing Director D2

Secondly, in small companies performance measurement was concentrated in financial measurement. Again, these companies will be further explored in the section dealing with "Financial Issues". In one company, a large manufacturer of paper and board, sales volume and level of output was almost "beyond discussion". Performance measurement was financial in its orientation and was calculated on an assumed output level, which was in any case the "sine qua non" of financial health.

"Our basic objective is to run our machines as fully as we can. The paper industry is very cyclical, so we have to get the best price at the maximum volume, keeping costs as low as possible. We can't work by quantifying that in terms of, say, 25 per cent of the market or 40 per cent growth. We can't be flexible because the price is fixed worldwide for our supplies and our products".

Marketing Director B1

Thirdly, where a company relies on export markets for its sales, there can be a tendency for debate to centre, not on how much volume could be turned, but rather on the profit that it would generate, which could vary even when volume was constant. This dilemma is well illustrated by the comments of the Marketing Director of a medium distilling company:

"We marketed a malt whisky in France two or three years ago. It was offered in two variations, a five-year old and a twelve-year old. The five-year old achieved good volume sales, but didn't give us the profit needed, due to a number of factors, the main one being changing exchange rates. For that reason we're very cagey about volume forecasts".

Marketing Director A7

Fourthly, as in the case of companies supplying customers with components for further processing, where it is the close relationship with the customer which determines not only volume and profit but the entire product range profile, sales volume forecasts tended not to be emphasised in the strategic plans.

New Product Development

New Product Development is widely recognised in the marketing literature to be a crucial factor in the continued success of firms. This importance was reflected in many companies who gave New Product Development pride of place in their strategic plans. A few of their comments are cited below:

"We have long-term objectives, we have a five-year plan. It covers sales growth and profit growth, within that, obviously, a mix of what we're going to do to achieve those figures - what we'll be doing in new areas of business or areas that are in test".

Marketing Director A2

"In terms of long-term range planning we plan for improving existing products as well as for new products".

General Manager A3

"Within the macro parameters of the three-year corporate plan, there are individual plans such as product development".

Marketing Director C6

"Our planning process, called the Strategic Business Analysis starts off in January, which broadly says in five years' time we're going to do some business in the USA. There's a product idea with a basic description of product and cost, and how much of it we expect to be able to sell for how much".

Sales & Marketing Director D2

"Within the five-year plan you're also looking at product requirements and developing new products to meet them".

Marketing Director E4

"We have this five-year plan where we have to write down our objectives with all the product areas we want to go into".

Product-Market Manager E6

While new product development was pursued in all industry sectors, the activity was seen to differ according to industry, according to the size of firm and the nature of the goods it produced. For example, company A2, a small company manufacturing cakes and biscuits develops new flavours and varieties of cakes and also considers branching out from packaged ambient cakes into the frozen cake sector. Company A3, producing instant food and beverages, tinned and bottled foods and confectionery, pioneered the freeze-dry technology used to preserve foods. It continues to apply this technology to different foodstuffs, thus developing "new" products.

Company C6, a small company weaving carpets, tends to base product development on changing patterns and colours, in line with changing fashion and consumer preferences.

Companies D2, D5, E4 and E6, all in the industrial sector, are influenced by technological innovation, using it either to improve or modify existing products, often called second generation products; or to innovate by inventing new products.

The underlying difference between these two groups of companies is that of "radical" and "incremental" innovation, the former suggesting greater upheaval than the latter. Both, however, as will be explained below, carry implications for product deletion.

Forecasts of Technological Change

As mentioned above, companies D2, D5, E4 and E6 used technological innovation as a basis for the development of new products. Three of these companies even included a measure of technological forecasting in their strategic plans.

"We opened up an office in Silicon Valley [USA], for two reasons. One - to increase our income and sales. Two - all the innovations come from there, so we can get an idea of what innovations will hit here in 3-5 years, by which time we'll be down the experience curve".

Sales & Marketing Director D2

"Strategic planning is an iterative process which usually starts off with the forecasting - for example we take the vehicle forecast of BL and Vauxhall and from that derive how many rack and pinion steering columns we will sell. However, we are currently working to improve a new, lighter form of steering called variable-ratio steering. Provided we can develop it sufficiently to bring down its price, we expect, over the next few years, a lot of cars to fit variable-ratio steering, and that will mean that the existing product will be eliminated to an extent....The other major change we're making to steering is the development of plastic housing to replace the aluminium. It's not much of a change from the design point of view, but it's a fairly big cost reduction".

Marketing Director D5

Forecasting technological change was not the exclusive proclivity of industrial companies, however. In particular, fast-moving consumer goods manufacturers were attuned to packaging innovations while consumer durable companies monitored innovations in materials and electronic controls which may be incorporated into their products.

In all, only six companies specifically mentioned forecasting technological change as a strategic planning ingredient, while eleven mentioned new product development. Various reasons were given by companies for not including new product development in strategic plans, few of which indicated a lack of concern about the new product development function.

A few companies' NPD activities were carried out at an international level by the parent company. Others experienced the Customer Active

Paradigm, developing new products jointly with specific customers. Others still sought to develop new products when it appeared that the existing range of products would not generate the necessary growth required by strategic objectives.

Mergers and Acquisitions

The final growth variable in strategic planning is "mergers and acquisitions":

"Along with achieving a return on capital of at least 20 per cent, we plan to improve our gearing, and to be in a position in the third year of our plan to have two additional overseas companies".

Chief Executive E3

"As the marketplace is becoming more and more international, I'm finding that the main competition is not in the UK or bits of Europe but Japan, where they have a lower cost base than we have. The strategic decision that has to be made is whether to go and buy a plant in the Far East".

Sales and Marketing Director D2

This proved to be the least popular strategic planning issue, but nonetheless worthy of inclusion for the impact mergers and acquisitions have been shown to have on product elimination (Avlonitis 1982). This effect will be further analysed in the section dealing with "precipitating circumstances".

6.1.3.2 Finance Issues

It may seem glaringly obvious to say that The Objective of any company is to make money. However, the recession of recent times stands as a testimony to how elusive this overriding goal can be. The disclosure by Michael Edwardes (1983) in his book Back From The Brink that BL cars made the handsome sum of £5 profit on every Mini shows how other objectives, as well as managerial oversight, can combine to frustrate the achievement of financial goals. The degree to which financial planning and control is written into the strategic plans of a company varies enormously. Profit is a function of the amount of money that flows into and out of the company. The companies interviewed in the current study were concerned with one or more of three financial variables: long-term investment, profit, and cash flow or liquidity.

Long-Term Investment

The "long-term investment" has to be considered, as the growth and development of a firm is largely dependent upon its manufacturing capabilities. More efficient production, reduced costs and expansion all have to be planned for in terms of capital requirements, and this has far-reaching effects in all areas of productivity. Only 6 of the 25 companies claimed to have a facility for including "long-term investment" in their strategic plans. A few of their comments reveal the scope of this concern:

"In terms of long-term objective-setting, plotting company direction is very important as this involves all the financial issues such as current capacity, assets and new plant that may be required".

General Manager A3

"We have a Senior Director group, which consists of Marketing, Sales, the Manufacturing Directors and myself - we will be looking at broad strategy decisions on products and we may say, well, with the information coming up through the product group it is apparent that we should be looking at a new class of products - let's do a proper marketing review, let's look at what the investment is going to be...a full market study".

Chief Executive E3

"We have a three-year time horizon on our strategic plan. It was chosen because in the confectionery industry the cycle of capital installations - which is an important aspect of the plan - is very short. We don't have a design and planning stage as you might with an aircraft".

Marketing Director A4

"There are a few things we identify in the five-year plan, which we're not currently doing, but where we've budgeted some expenditure because we envisage getting into them, say, in three years' time".

Marketing Director A2

"Our five-year plan requires us to apply our minds to our strengths and weaknesses, what marketing thrusts we're going to have, like capital requirements, people requirements".

Marketing Director D2

Profit (Return on Investment)

The second financial variable, mentioned by 20 of the 25 companies involved in strategic planning is profit. Profit was referred to as "gross margin", "return on investment", "return on capital", "return on assets employed", "marginal contribution", "marketing contribution" and quite simply as "profit". The relevance and usefulness of the various ratios used by accountants to gauge profits is beyond the scope of this study. However, a definition of these terms is given in Table 6.1.4. Of more immediate interest is the way in which strategic planning for profit conditions the tendency to eliminate products from the range.

Although five companies did not specifically mention profit in relation to their strategic plan, it would be wrong to conclude that profit did not concern them. One of the companies manufacturing fast-moving consumer goods reaped fairly stable profit margins from their products and sought gains in the profitability of the company as a whole, through greater volumes of sales at existing levels of profit. Similarly, two consumer durables companies whose profits were stable did not specifically mention "profit". The remaining companies were two manufacturers in the industrial sector; both produce fairly small batches of products where the profit margin of each sale or order was set. This almost guaranteed the profitability of every product, which was only modified by managerial staff on special occasions, usually for an important customer or a large order.

Table 6.1.4 Key Ratios for Calculating Performance

PROFITABILITY RATIOS

Return on Capital	Profit before tax expressed as a percentage of capital employed
Return on Assets	Profit before tax expressed as a percentage of total assets
Profit Margin	Profit before tax expressed as a percentage of sales
Return on Shareholders Funds	Profit before tax expressed as a percentage of shareholders funds
Gross margin/marginal Contribution	Difference between revenue and direct costs

As with those variables relating to growth, the profit variable was included as one of several in the strategic plan. The following examples illustrate how market share objectives often served as targets, supplementary to the profit objective:

"Our strategic objectives project three to five years, are reviewed annually and are measured in financial terms: money, profit. Now the subsidiary requirement will be that we have, by five years, trebled our market share".

Sales & Marketing Director E5

"Our basic objective is to make carpet at a profit and to maximise that we have objectives to increase market share, provided that it is profitable".

Managing Director C7

The overwhelming opinion of the Managers and Directors interviewed in this study was that the product not contributing profit would almost certainly be eliminated or replaced. A selection of comments illustrates the point:

"When we did the strategic plan two years ago, and looked at the ROAE by product this one was the lowest of all. We knew we couldn't reduce the cost, or increase the price, which are the only two ways of increasing ROAE. We're prepared to put up with problems in the short term, but if you can't see anything in the five-year period, you've got no option but to phase it out".

Marketing Director D5

"If we ever predicted making losses due to a product, we'd drop it immediately, no qualms".

Marketing Director A4

"It was part of the product range in one of our mills and went into a loss-making situation. Its objective as always was to make a profit, which we couldn't see how to rectify...we chopped it".

Marketing Director B1

"On this product the basis of the whole decision was - we're losing money, it affects our bottom line, it's unacceptable, drop it...One day people were coming to work, next day they weren't".

Sales & Marketing Director E5

The above examples are drawn from companies who stressed the overall profit objective, which tends to suggest that where a stringent goal for profit is set, the urge to eliminate any product not contributing sufficiently is very strong. However, the converse of this tendency - that "those companies who do not set long term profit goals feel less the urge to eliminate products not contributing" - should not be inferred under any circumstances. Clearly refinement of the problem and further investigation is required to delineate the relationships and issues at play.

Cash Flow or Liquidity

Deciding to eliminate a product impinges not only on sales volume and profit, but also on the managerial concerns which comprise cash flow: capital expenditure, capacity utilisation and stocks. Four interviewed companies included forecasts and targets for cash flow in their strategic plans. Some of their comments follow, showing not only the scope of concern about this variable, but also its relation to other strategic variables.

"The industry's profitability is very closely geared to the last five or ten per cent of capacity and our profitability rises very sharply as we get to maximum plant utilisation. Conversely, profitability falls off very sharply if plant isn't utilised and that leads on to other factors: redundancy, capital equipment utilisation. Then we have

financial targets which are primarily cash flow targets, because for obvious reasons the business needs to have cash flow, forecast of utilisation of working capital and of capital expenditure, as that determines our interest charges, after-interest markup, profit. All these aspects are intimately connected, and it's difficult to know which one is more important".

Marketing Director A4

"We have the Company Business Plan, where we're looking for objectives in terms of cash flow, return on investment and within that global framework each will look at its own environment and objectives".

Marketing Director B1

6.1.3.3 Marketing Issues

This set of strategic variables tries to define the position of the company in relation to its markets and their requirements.

Forecasting Market Size and Share

The first variable, forecasting market size and share was met in the section dealing with sales volume, where both variables were listed as constituent elements of the strategic plan. A total of 15 companies mentioned this issue, and two further examples are quoted to define the scope of market share in strategic planning:

"The basic definition of our business is the floor cleaner and laundry business, so our first objective is to maintain our market share in those two markets".

Product Manager C3

"In the segments where we sell our "new technology" products, we are aiming to achieve 40 per cent market share. We would like to obtain an overall 40 per cent market share, but we believe we cannot do it by expanding traditional product-markets because that would lead to too strong a price competition which would not be compatible with our profitability objectives".

Marketing Director B3

Market share can be defined as the ratio of a company's sales of a product to the total sales of that type of product in the market. Market share targets are not simply sales volume targets expressed differently; while they imply that a certain volume be attained, they introduce the variable of competitive sales volume, which must be dominated. Already cited are examples of companies that exhibit a

certain reluctance to drop products because of the detrimental effect this might have on sales volume levels (see paragraph 6.1.3.1).

Definition of the Company's Product-Markets

A second strategic marketing variable is the definition of the company's product-markets.

"We have to decide between the fast moving high-volume type of business, or on something highly technical with less volume but more profit. Then we've got to think about the costs of serving that market. With high volume then the overheads have to be kept pretty low".

Sales & Marketing Director D3

"Our basic strategic task is to define our business: current business and where we want to be in the future".

General Manager A3

That this issue was described as being of strategic importance by ten of the sample companies lends empirical weight to the argument that the definition of "mission" or "charter" - a marketing task - does contribute to the formulation of the long-term plan (Day and Wensley 1982; Anderson 1982). Equally interesting, however, is the notion that such a definition be asset-based, as the following three quotations show:

"We have a total production capacity of 150,000 tonnes, meaning that with full production we can only cope with about 15 per cent of the market, which defines our strategy. We are speciality paper makers and we put a lot more effort into marketing and selling than other manufacturers and for our volume we have a lot more products and customers than them".

Product Manager B2

"Our tendency is to go away from high volume - low value products to low volume - high value products. The value of our products has moved up substantially in the last ten years, some of our products are over ten million pounds each. We don't feel we can compete against the mass production and protected industries overseas and therefore we must go for more specialised products in more specialist markets, with more design content".

Marketing Director E2

"We are naturally in the better end of the domestic and contract market. We are dedicated weavers of carpet in those two sectors".

Assistant Managing Director C7

Implicit in these remarks is the intimate link between strategy and product policy.

Company Image or Reputation

The third and final strategic marketing variable is the image or reputation of the company. Paying attention to company reputation may increase the propensity to drop products, or at least replace them before irreparable damage is done:

"If you take our range of cleaners, supposing something went wrong, well then we'd have a really serious problem because those products are the company. We'd have to take drastic action as necessary to ensure the product range improves".

Product Manager C3

"We've taken products off the range because we've been uneasy about product quality. We didn't feel they properly reflected the quality of the brand name".

Marketing Director A2

However, some companies took a certain pride in their ability to supply a total range of goods, being the market leaders, which they felt gave them an amount of comparative advantage:

"Not all products are maintained solely on profitability. Our theme at the moment is the "world of clocks" - We're supplying across a wide range of products for prestige. Grandfather clocks, for example, don't make us money - but I wouldn't drop them".

Product Manager C2

"We produce four types of carpet. There's no question about continuity within these four basic construction types, we have plant and machinery to do so and we are the only company in this country that does, so it's an asset we want to capitalise on".

Marketing Director C6

The three strategic issues, market share, definition of company's product market and company image/reputation do overlap in scope, and many of the companies included two or more of these variables. In the following examples, combinations of these marketing variables are shown.

" We want to maintain and enhance our reputation as a knowledgeable, innovative market leader able to service all the markets current and future in design engineering requirements. So that limits our mission to the design engineering markets".

Marketing Director B3

"We aim to keep a stable workforce. To lead the gas central heating market in Britain by building on our current market share of 25 per cent".

Marketing Director C4

Increased awareness of the interface between the company and the market was not limited to those companies with strategic plans. One small manufacturer of kitchen furniture was concerned with expanding the branded up-market side of the business in an attempt to foster an overall quality image. Another small company, processors of food, have redefined their primary area of interest, switching from fresh to frozen foods.

6.1.4. The Effect of Strategic Issues on Product Elimination

Having described the issues of importance to corporate strategy, attention is now now turned to detailing the way in which these issues affected, or were seen to affect, the elimination decision. Each set of issues is now taken in turn.

6.1.4.1 The Effect of Growth Issues on Product Elimination

Growth issues include future sales volume, new product development, forecasting technological change and mergers and acquisitions.

The precise nature of the influence of sales volume objectives on a company's product elimination activities is difficult to discern because the forces at play are manifold. However, as in the case of company E6 "the constant pressure to keep the dollars up" does have implications for deleting products from the range. This may be manifested in a greater concern with New Product Development, the reluctance to drop a product completely for fear of losing volume and thus an increased propensity for replacing products. The words of a product manager in a large company manufacturing wood-free paper and board help explain this point:

"Taking the withdrawal of Brand A then, there was the identification that there was a problem (in this case stagnant market share and sales volume), the analysis leading to the interpretation of the cause of the problem, the exploration of alternatives - one of which is to get out of that area altogether - we give that ground very reluctantly, we want growth and we don't want to create a vacuum anywhere".

Product Manager B2

The effort of including new product development and its corollary, forecasting technological change, in strategic planning on the product elimination function is reflected in the title of Avlonitis' (1981) paper "Product Elimination: A Neglected Phase in Product Innovation". This implies that NPD creates the conditions where a product might be considered for elimination, that product elimination is part of the NPD function. This is not always the case:

"Up till now, all we've done is to increase the number of products, and, if we continue, all we'll do is spend our time supporting old products instead of getting into new areas. That is where the danger lies".

Product Manager E6

"There is a lot of pressure from production units to say, the tail end of this range is awful - they're not contributing, but we're not getting out of things we don't want to be in, until we've built up our position in those areas we desire...some would say that it is a bad strategy and that the best way to concentrate your mind on what you want is to have space to do so; whilst you've got the candidates for withdrawal still on your machines you don't have the stimulus to get out and get the new one on".

Product Manager B2

In contrast to these comments is the fact that "new product development" may often be cited as the reason for dropping a product:

"Product elimination has two sources in this company. We have a planned replacement policy for market need and a new product development programme both of which can cause products to be dropped. We also have product elimination based on product performance".

Marketing Director C4

While this can mean that a strategic drive for new products makes the existing product line obsolescent, or necessitates the creation of space by deleting an existing product, as often as not the development of a new product is carried out in response to stagnant or declining market shares, sales volume or profit. The precise nature of the relationship between new product development and product elimination will be examined fully in the section dealing with "precipitating circumstances".

One final observation of the effect of NPD on elimination is crucial: the decision to eliminate a product for which there is no improved, new replacement is very much more difficult and is approached with a measure of trepidation:

"In the three areas where we have dropped products, each had been replaced by a second generation and there's not much of a problem in the market, assuming a smooth changeover: there's a product and price advantage the customer can easily see, he doesn't feel he wants to buy the old product any more. But what we're faced with now and in the next years, I believe, is that we are going to have to eliminate some products for which there is no direct replacement, and that is much harder for us to do. Harder from a marketing point of view because, customers having bought the thing in the past, they want to carry on buying it and that is more sensitive and harder to handle".

Product Manager E6

As a concluding note, it seems fair to say that companies emphasising growth variables in their strategic plans were concerned with maintaining sufficient numbers of products to achieve targets. This meant they had to replace products rather

than drop them completely. Already quoted in this paragraph is one example of the reluctance to withdraw a product completely (Company B2). A second example is that given by the Managing Director of a company manufacturing furniture (Company C1):

"In all, there are three ranges we would like to discontinue, but we've no intentions of dropping them in the near future because we've got nothing to fill the place they're currently taking or to replace the volume they currently supply".

Managing Director C1

6.1.4.2 The Effect of Financial Issues on Product Elimination

Financial issues as described by respondents comprised long-term investment, future profit (or return on investment), and cash flow or liquidity.

In certain instances there is an obvious link between long-term capital investment and the decision to eliminate a product, as evidenced by the following observations:

"Often an investment programme in one factory means that part of its production may have to be relocated, or dropped completely. This in turn may involve further investment. In such a case the decision will be the evaluation of the appropriateness given the product-market conditions".

General Manager A3

"Withdrawal from, or entry into, a market has to be measured in terms of what it does to the rest of your product range and to other key issues related to the resources we've got. In our business each single route [manufacturing line] is dedicated - it can't be used to make anything else, so if we're going to make a new product, or conversely withdraw and old one, we've got a group of people and machines that can't be used for anything else, so we have to be sure, responsible".

Sales & Marketing Director E5

The relationship between long-term investment plans and the product elimination decision is founded on the impact that the decision to buy new plant has on product policy. Ironically, the importance of this relationship was brought to the researcher's attention by the fact

that often unforeseen capital demands made by an ailing product were insurmountable, resulting in an unforeseen and unwanted deletion, as the Product Manager of a company manufacturing electrical and fibre optic connectors explained:

"The line [product] was made with a tool that required refurbishing or replacing. That particular product gave us a very poor payback versus cost. We decided to get rid of it altogether. The Managing Director decided that, for short-term reasons, he didn't want to spend money on replacing the tooling, so the product wasn't replaced. Its contribution was reasonable, and although a considerable amount of money would have to have been used to refurbish the tool, it was justified, and in my view, we should have carried on".

Product Manager D7

Not having the resources to invest in an ailing product is indeed problematic, but how much more frustrating is the predicament of a company manufacturing industrial saws, which lacked the resources to invest in a healthy product:

"The product is a woodsaw. We invented it. It's used for cutting wood below tree-trunk size, and it revolutionised the cutting of timber - it's a multi-million pound market worldwide. We found that the size of output was governed by the amount of investment we were prepared to make. The market grew, the product took off, we couldn't match the overhead structure the competition had. They invested lots more money to produce greater output. We didn't have sales resources or marketing skills, the market got large, more cut-throat, we couldn't make economies of scale and withdrew".

Sales & Marketing Director E5

Companies making provision for cash flow in their strategic plans tended also to place greater emphasis on profit growth than on sales and volume growth. There was no indication in any of the companies interviewed that concern with cash flow at a strategic level might foster the kind of conditions where a product may be raised as a candidate for elimination. However, taking the three variables that comprise "financial issues", it was interesting to note that the companies who included more than one financial variable in their strategic plan - 6 companies in all - appeared to be more attuned to

the benefits of product elimination. Some of their comments expand this argument.

"We have in the past kept a product for a customer to enable us to do business across the whole range. However, over the last few years we've adopted range rationalisation as a principle because we found we were selling over 200 lines - so as a business principle it's better for us to concentrate on 20 major lines with good sales and profitability".

Commercial Director A5

"The only real consideration is whether or not you are making a profit on a product and if you cannot do so, you have to scrap it".

Marketing Director B1

"Sometimes at budget time when we're formulating the year plan we do a real hatchet job where we take a formal look at range proliferation. About three years ago we had a three-year period plan for taking out various packs and products from the range, which we did. We're coming up to that again now, I suspect. Our major competitors have done the same thing. 133 packs to 70 in the last one and a half years".

Marketing Director A4

"We're a financially-oriented company and the financial controller is the man with the veto. If he says a product is unprofitable and not contributing to overheads then that's that. He won't accept a loss".

Marketing Director D2

Quoted in paragraph 6.1.4.1 are examples of companies who emphasise growth objectives and display a certain reluctance to drop products from the range completely. On the other hand, as many of the benefits of product elimination enhance financial measures of performance more than measures of volume, it is logical and intuitively attractive to attribute financially-oriented companies with a strong propensity for eliminating products from the range. However, given the qualitative nature of interview findings and the concomitant problems of small samples, interaction and interpretation on the part of the researcher, further quantitative research is necessary to confirm or infirm the findings' reliability and validity.

6.1.4.3 The Effect of Marketing Issues on Product Elimination

Those strategic issues classified as marketing issues were: forecasts of market share, definition of product-markets and company image or reputation. On the whole, an emphasis on marketing issues appeared to engender a certain reluctance to eliminate products from the range.

Concern with market share serves to illustrate this reluctance, since withdrawal of a product entails not only losing the volume it once contributed, but also the possibility of losing any residual demand which might be satisfied by competition. This could further frustrate attaining market share targets.

Definition and redefinition of product-markets has severe implications for product policy in general and product elimination in particular. On the one hand, it can drive companies to pursue a particular product in a particular market for many years because that sphere of activity has been designated desirable. Such a case was experienced by company A3 who finally pulled out of the product-market after supporting it at very low volume for twenty years. On the other hand, where a product-market is not designated as being especially desirable, the likelihood that a product experiencing problems will be abandoned is greater. The following contrasting statements by the Marketing Director of a company manufacturing cocoa- and sugar- based confectionery serve as an illustration:

"Take chewing gum. It is not important for us as a product among all the many products we market. But it is important in the children's market where we want to be represented".

"There's been quite a large decline in the toffee chew market. We have a few ideas as to why that is so, but we haven't bothered to find out because it is not a market we're interested in strategically".

Marketing Director A4

A few more quotes clarify this point:

"Our cash cow as a group is the traditional equipment and its consumables, which number up to 2,000 items. As we move into new technology, we will meet a greater degree of standardisation. What we need to do is look at those 2,000 items in a very organised way to enter profitably on the new technology side".

Marketing Director B3

"We have an identified core business - Branded Packaged Cake. There are other activities we are fringing into at the moment and are therefore outside the core business. Any plans we do have tend to be divided into two: core and non-core. We're a lot more careful with our core products".

Marketing Manager A2

Companies who emphasised marketing variables in their strategic plans tended to be sensitive to the problems that product elimination can cause in the marketplace. The effect of this sensitivity was twofold: firstly, a great attempt was made to circumvent problems. Company B3, despite their redefinition and reorganisation of the marketing effort, continued to manufacture a product for a customer who was unable to obtain the goods elsewhere. To achieve minimal disruption of their own systems, a single, large batch delivery was negotiated. This action preserved their reputation in the eyes of this important customer. The second effect of increased sensitivity to the market was reflected in a greater tendency to anticipate decline and to thwart it by product replacement programmes or by moving into new or different areas.

6.1.5. Product Elimination as Part of Overall Product-Market Strategy

The above sections of findings report the issues that, in general, were felt to be of some relevance to strategic or long-term planning by the sample respondents. However, the second level of investigation, namely the product-specific level, revealed more focused responses. In describing one or more specific elimination decisions, respondents were asked whether they considered the elimination to have been "part of overall product-market strategy".

Of the 50 specific case histories, only 13 were clear-cut decisions taken as part of product-market strategy (See Table 6.1.5). These 13 fell into one of the following categories: (See Table 6.1.6)

- a. Product deleted under a general programme of rationalisation.
- b. Product deleted because a new product had been developed.
- c. Product deleted because of declining market potential forecast in strategic plans.
- d. Product deleted because company resources are required for alternative developments.

Table 6.1.5 Deletions Considered to be Part of Strategy

Industry	A	B	C	D	E	TOTAL
Number of Deletions						
considered to be	4	3	4	3	1	15
Part of Overall						
Product-Market						
Strategy						

N = 50

Table 6.1.6 Reasons for Dropping (as Part of Overall Product-Market Strategy)

Reasons for Dropping (as Part of Overall Product-Market Strategy)	Rationalisation	4
	New Product Development	5
	Declining Market Potential	3
	Resources Required Elsewhere	1
	(Poor fit with company image/competitive activities)	2

In subsequent sections of this study, each of these categories of elimination will be discussed in full. A further two product deletions were considered to have been carried out as part of market strategy, although the respondents concerned pointed out that they could be guilty of making a virtue out of a necessity. The

respondents in the companies concerned, C3 and E6, described how the products in question did not properly reflect the desired image and reputation, were outmoded, clearly in the mature stage of the product life cycle. However, those individuals responsible were finally encouraged to act only when competitive products were launched and had begun to erode market share. Clearly, the product development programmes that were triggered were responses to problems as much as they were part of overall product-market strategy.

Investigating whether or not a product was deleted as part of overall product policy was complicated by the fact that by the time the final decision to withdraw has been reached, it has often become part of overall policy, almost by necessity. This aspect is more fully dealt with in the section on precipitating circumstances.

6.1.6. Summary

This section set out to investigate three questions:

1. What is the nature of strategic planning in British manufacturing firms?
2. What are the implications of strategic planning for the deletion decision?
3. Is product elimination considered to be part of overall product market strategy?

The purpose of this paragraph is to summarise the findings.

6.1.6.1. What is the Nature of Strategic Planning in British Manufacturing Firms?

Strategic planning was carried out in 25 of the 31 respondent companies. The most common time horizon was five years, with years four and five characterised by emphasis on the narrative of company direction rather on detailed figures. This was defined as "diminishing quantification". The significance of the strategic plan varied. In the case of firm A5, it was "the most important document", with all company activity flowing from it. Other companies were more vague about its benefits:

"For what it's worth - and there's a lot of people who say it [the strategic plan] isn't worth the paper its written on, the discipline of having done it, does actually mean you've put your mind to where you're going".

Marketing Director A2

The ten strategic variables which emerged from the discussions with managers were regrouped under three headings: Growth, Finance, Marketing. It was tentatively postulated that companies who emphasised finance variables displayed a keener proclivity for deleting products.

The three strategic areas were not considered to be mutually exclusive. For example, "long-term investment" was dealt with under the general "finance" heading, but it also related to NPD, which was perceived to be primarily a "growth" variable.

Companies who did not formally plan for the "long term" should not be considered to be unconcerned with where the companies are heading:

"Our objectives involve the development of ranges...we have to find production facilities to do that".

Marketing Manager A1

Finally, the strategic plan is not a document which puts into writing every strategic managerial concern. More elusive, abstract issues such as corporate culture also influence and shape management's thinking, and could carry implications for the product elimination decision. For example, without formally addressing the issue, Company A2 tended to eliminate the same number of products they introduced:

"We might aim to introduce five [new products] in a year and while we don't consciously take five off, there is a feeling about the size of the range and I can think of almost as many products taken off as we've put on in the past 10 years".

Marketing Director A2

Issues such as this could provide fruitful areas for further research.

6.1.6.2. What are the Implications of Strategic Planning for the Deletion Decision?

Focusing corporate thinking on where the corporation is going or should go, theoretically entails focusing thought on those areas it should come out of. This was not always the case. In companies where the growth objective was paramount, products could be added to the range without deletion, thus proliferating the product offering, increasing sales volume and company market share.

It is clear that three of the reasons for considering product elimination to be part of overall product-market strategy bear direct little regard, if any, to NPD: declining market potential; failure to contribute to company image; rationalisation programme. This suggests that product elimination is seen as contributing to strategic objectives in its own right, and not just as a corollary of the NPD cycle. These reasons accounted for just over half of the eliminations considered to be part of overall product-market strategy, suggesting that as a fully-fledged managerial function, product deletion deserves attention. This is not to suggest that the decision to withdraw a product is as important or as frequent as NPD, but merely that, when faced with the decision of whether or not to drop a product, it often has strategic importance equal to any other decision management has to make.

However, several companies lamented that in the past eliminations had been carried out because products were at variance from plan, showing a symptom of the reluctance to regard product withdrawal from a strategic stance. The consequences of this omission were perceived much later where a new up-to-date range was hampered by a lingering first generation which frustrated production planning, sales planning, and worst of all, confused the customer.

6.1.6.3. Is Product Elimination Considered to be Part of Overall Product-Market Strategy?

Thirty-seven out of the fifty specific product eliminations were not considered to have been part of product-market strategy. Of

the thirteen product deletions which were considered to serve strategic objectives, four came about due to rationalisation, five due to new product development, three due to foreseen decline and one to make way for developments elsewhere. A further two products were dropped at least partly because of their ill-fit with the companies' image.

Section 6.2 Product Planning

6.2.1. Introduction

Avlonitis (1986) found that companies' product planning activities often provide the forum for raising the subject of product elimination. However, his findings were confined to the industrial market. The current study seeks to discover where product elimination finds its place among the activities that comprise "product planning" in consumer goods companies as well as industrial goods companies.

Aspects of the literature on product planning were reviewed in Chapter Two. The overall concept is broad, causing many writers to follow their preferred paths, each emphasising different elements of product planning. The overall picture of product planning painted by the literature is confused. It was decided, therefore, to have the respondents describe their own perceptions of product planning and to keep the researcher's interference to a minimum.

This section describes the content of product plans, the mechanisms used in product planning and the implications of each for product elimination.

6.2.2 Product Planning - An Overview

Respondents were asked to describe their product planning process. This allowed them to describe not only the issues, but the meetings and mechanisms they had instituted. The interviewer probed the following issues in some depth: the relative importance of planning issues; the extent to which elimination is planned as part of the product planning process; the mechanisms that control the planning process.

In general, respondents described two different types of planning activity. The first type is annual, deals with setting product objectives for the current year and details the tactics to be used in achieving the targets.

The majority of companies in the sample claimed to develop an annual plan. It was referred to in a number of ways : the product plan, the business plan, the business statement, the budget, the forecast. A semantic discussion of the differences among these terms is of little concern to the study. Of more interest is the identity of purpose that such plans share: to plan the achievement of revenue of the company's product offering.

For those companies whose overall objectives were guided by a strategic plan, the annual plan was usually the first year of the three-, five- or ten-year plan. In other cases, the annual plan was the budget or forecast. A selection of quotes exemplifies the scope of such annual plans in British industry:

"We have a ten-year plan which we update annually. Basically, it's the marketing department saying that in the next 10 years we see an increasing demand for, say hydraulically-powered cranes".

Marketing Director E2

"By the September of each year we put in a detailed business plan for the coming year, in line with our strategic plans".

Sales and Marketing Director D2

"The annual budget covers the September-August period. It covers sales turnover and profit targets and what we need to do to meet those objectives in terms of displays, number of accounts etc".

Marketing Manager C5

"We have a budget. Objectives are part and parcel of the budget, which is done yearly. The starting point is what the sales figures will be - in quantity and we convert this into money terms"

Managing Director A6

The second type of planning activity tends to be more frequent and deals with the extent to which the targets of the annual plan are being met. All the respondent companies controlled their performance, and in a number of cases this activity spanned more than one organisational mechanism. Typical meetings were: product review committee meeting, product development committee meetings, price review meetings, business team meetings, sales engineering liaison meetings, executive meetings, board meetings, obsolescence committee meetings, general management meetings. Again, the nature and role of some of these meetings are best described by the words of the managers:

"Our product planning is very important and is reviewed once a month. There may not be any earth-shattering news. It only takes about an hour, but at key times, when we're setting the following year's objectives, there's quite a lot of activity".

Managing Director C7

"Product planning is not a monthly decision, but it is a monthly debate and maybe this month we're having problems with a product range, because of production problems, marketing problems, financial problems, or whatever".

Sales & Marketing Director E5

"The planning committee meets every month to discuss every product type. Other meetings are production planning - monthly - for adjustments to meet budget. Every 2 months there's the pricing committee meeting".

Marketing Director C4

"We review our existing products in two ways: 1) monthly bookings and billings and profitability of every line and 2) profitability by order".

Product Manager D7

"I have regular meetings - monthly - where we review what the salesmen have been doing and see if it fits where we want to go Now every quarter, I'll sit down and review the year to date".

Sales & Marketing Director D3

"We have board meetings monthly where the monthly accounts are discussed and we also get contribution figures weekly from the computer. We decide on changes in the product mix at a meeting which takes place every 2-4 weeks".

Managing Director A6

By way of a brief summary, product planning is prognostic, while control is diagnostic. The two are not strictly separate functions, as some of the above quotes illustrate. Prognosis is largely based on diagnosis and diagnosis often has the effect of changing a prognosis.

The objective of this section is to locate the product elimination decision within the context of these two types of product planning and control mechanisms. Simply put, we are attempting to answer the following question: is the product elimination process set in motion as a result of compiling the yearly operational plan, or can it emanate from the more active reviews of performance which comprise "control"?

The heterogeneity of the precise combination of planning and control mechanisms was well-suited to an interview survey. It does however, make presenting the findings a rather complicated affair. For reasons of academic clarity this paper is structured around the two broad organisational methods used by respondent companies to perform their planning and control activities. The two broad organisational bases for planning and control are "marketing" and "managerial". Thus, the planning modes may be said to be marketing-based or management-based. These two modes of planning are dealt with in turn, below. Clearly, not all companies fall into such imposed academic categories, and exceptions are pointed out. Table 6.2.1 provides a summary of this classification.

Table 6.2.1 An Overview of the Product Planning and Control Modes

Types of Planning	A			B	C		D	E			TOTAL
<u>Marketing-Based</u> Product Group	A3	A4	A5	B2				E6			5
Marketing Group	A1	A2	A7	B3	C2	C5					6
<u>Management-Based</u> <u>Extended Management</u> Group				B1	C3	C4	D2	D5	E1	E2	E4
					C7	C6	D7		E5	E3	13
The Board	A6				C1	C8	D1	D3			7
							D4	D6			

6.2.3 Marketing-Based Planning and Control

In total, eleven companies planned and controlled their products through the function of "marketing". The majority of these companies were manufacturers of consumer goods. The eleven firms can be further categorised into those organised around groups of products and those whose marketing people catered for the entire range.

6.2.3.1 Product Planning Through the Product Group

Five companies' product planning activities were focused in groups or teams of people whose responsibilities centred on a group of products. In the three consumer companies who used this mode of product planning, these groups or teams were known as "brand" groups. In the other two companies, from industry categories B and E, these groups were known as business teams and product-market groups respectively. In addition to formulating the yearly product plan, product management in these five companies carried out the more frequent control activity. Their yearly product planning activities are considered first, along with their implications for product elimination. Despite their different titles these product groups discharged similar responsibilities:

"A major element of the yearly plan is emphasising which products we want to concentrate on. For example, this year we are concentrating very much on soft drinks. We are under-utilised on capacity and this is a good opportunity for us to increase volume. Once objectives have been set by the group in terms of volume and growth by [product] line, they separate down into the basics of any plan: production, promotion etc".

Commercial Director A5

"We have a marketing system based on brands, and those groups have the responsibility for product planning. Product modification, promotion, relaunches are all done through the brand group system. The brand managers are charged as if it were Chocbar Ltd* or Toffobar* Ltd and they prepare detailed plans for the day-to-day running of their brand".

Marketing Director A4

"The internal planning is done through business teams. Each business team comprises a representative from each of the major functions: production, technical, accountancy, marketing, sales manager. They meet at two levels - operational is one - and we try to use the same people for strategic decisions. The business teams take market information to work out what share we've got in product areas compared to the competition. They isolate areas of potential for the future - areas of growth - and out of that we'll identify a 'cell' that looks interesting".

Product Manager B2

The basic responsibilities of product management in these companies were similar. They included: conducting and synthesising marketing research, setting sales objectives, targeting market segments. In the two industrial companies the new product development function was managed by the product management system, however, in the three consumer goods companies this activity was hived off:

"We also have a specific separate brand group dealing with new products".

Marketing Director A4

* fake names to conceal company identity.

"When there is an idea for a new product it is written on a one-page technical note to ensure technical feasibility. If it passes this stage, then its development is governed by a new product steering committee".

General Manager A3

Since product plans are essentially plans for success, they tend to relegate product elimination to the bottom of the planning league. This does not mean that product management does not have to consider the question, but that they see it rather as a secondary - and often separate - activity, more suited to "control" activity:

"Product elimination is by and large a separate activity because major products don't get dropped - they feature in our plans. It's done more on an ad hoc basis through the product group".

Commercial Manager A5

However, taking the specific example of "items", the product plan and the yearly "planning time" do seem to provide a forum of debate and discussion, whereas elimination of a range is more relevant for strategic management plans:

"At budget time every year, there is always the need to decide whether or not to continue the following year with the range we've got. We knock out certain lines at that time and we call that 'range rationalisation'. Anything which may affect the strategy of the brand goes to the board".

Marketing Director A4

"Our product planning is at 2 levels: in-category product planning and what we want to achieve in one specific business area and adding to the categories. It is at the former level that elimination will occur".

General Manager A3

"Our regular procedure is to look once a year at the performance of each of the major branded products - the stock ranges - in terms of what's moving ahead and what's slowing down. Some of our ranges have very long tails, with the products at the end selling very slowly. Only by looking at which of these tail-end sizes can be safely removed, can we begin to decide how the range might be reshaped".

Product Manager B2

Product planning may also interfere with the product elimination function where the emphasis is placed on proliferating the company's range. This has already been encountered in the section dealing with strategic planning. Company E6, a large manufacturer of electronic testing equipment has, for the past decade, concentrated on expanding the product portfolio. This has hitherto eclipsed the need to drop products, a fact well-recognised by the product managers who now acknowledge how product elimination will help the entire operation:

"We should have a plan. We make a lot of fuss about product introductions but we don't plan eliminations. Things creep up on you. I'm having to obsolete a product at very short notice - we should never have got ourselves into that situation. I should have known 18 months ago that we were going to have trouble on this product and I could have planned it better: warned field engineers and customers".

Product Manager E6

Controlling performance against budgeted targets was mainly done by the product groups, although often other departments would provide relevant pieces of information which is fed through to the product group. Control activities amounted to a frequent review of product performance against specified criteria.

A few comments illustrate the nature of these activities:

"We have a 'hit list' which is issued monthly and reviewed quarterly by the brand group. It covers sales figures, profit, stock levels and many more criteria. This is done by pack, flavour and highlights any weaknesses the product has in either sales or contribution to profit".

General Manager A3

"Our brand management system looks at every product in terms of sales every week; in terms of profit, every month - in operational terms daily because the brand group is involved with its products day-to-day".

Marketing Manager A4

"The establishment of business teams means they have a quarterly review of their business and a formal presentation of their business twice a year to division general management. This forces out the problems the teams are having to tackle".

Product Manager B2

In many ways, this part of planning activity was far more directly related to the decision to drop a product, especially when a product is being dropped due to its performance being at variance from plan. This point was highlighted by the managers themselves:

"When we review, I wouldn't say there was a heading in people's minds about withdrawal, but everyone would be aware of a product that has dropped behind its target turnover, or of products which are marginal. Of course little might be done about it before the next annual review time when we'd measure it against broader parameters".

Product Manager B2

"We review products monthly throughout the year and people have quite clearly in their minds' eye what the next one to go is".

Marketing Manager A4

"The 'hit list' focuses attention on weak products on a continual basis. It needs to be relatively formal. If we are to be aware of contributions we cannot be aware informally".

General Manager A3

"We look once every period - which is every four to five weeks - at major lines and by and large its volume we count. On a less frequent basis we look at profitability. We're more aware of that and it comes through on separate cost information".

Commercial Director A5

The general pattern revealed by these companies was that the monthly reviews were often adequate for detecting dubious products and for setting the entire elimination process in motion. However, in these companies the thrusts and emphases dictated by strategic planning effectively limited both the operational planning and control

activities to dealing with "items" in a range. In addition, the elimination candidates raised by either operational planning or control meetings tended to be somewhat "reactive" measures, since proactive measures were decided at the strategic planning level.

6.2.3.2 Product Planning Through the Marketing Group

The operational (yearly) planning was carried out in six companies by the marketing department. These companies had fewer products in their total range than those operating a product-based system. Responsibility for the product range was vested in a few key marketing people: the Marketing Director or Manager, the Product Managers (who, in these cases were responsible for the whole range of products) and their immediate assistants. In some cases, representatives from other functions such as finance, sales, logistics or production, attended marketing meetings.

Five of the six companies manufactured consumer goods, and one company belonged to the category of "fast-moving industrial supplies".

At the level of the operational (yearly) plan, the activities carried out were similar to those described in the previous paragraph: conducting background research, selecting target markets, forecasting sales and detailing programmes for achieving targets. They were also more directly concerned with new product development than were the product groups described in the preceding section, due to the fact that they had control of the entire product offering. A few managerial comments outline the nature of yearly planning in these companies:

"Our budget target for this year is to increase our volume by 9 per cent. Of course different products have different targets. For new products, the target may be as much as 70 per cent [...] Also, within the marketing group we look for marketing opportunities or ideas that might grow, in which case we are more susceptible to those products compatible with our current resources".

Marketing Director Al

"The year plan is three-fold, to cover our three major areas of business. We begin by stating the requirement of the marketplace, and what we must do to fulfil that requirement. We don't have product managers per se, but everyone involved in marketing has had product management responsibilities in other companies and so can do the job".

Marketing Manager C5

"We set volume goals for our plans and that is translated into profit forecasts. The brands are appraised very thoroughly at the end of the fiscal year. We do it continually as well, but annually to see why its gone wrong and what can be done".

Managing Director A7

"We submit a year plan for the current fiscal year to our US masters. On top of that we have the outlook, reviewed every month, which focuses on the next five months. Growth, sales and profit are all loosely projected in the five-year plan, and firmed up on in the annual plan. We try to focus on one or two business areas - we can't attack all our segments at once. For example, over the past two years we've made a determined effort to get into the anniversary clock business, the quartz alarm area and kitchen wall clocks. Our plan for 1984 had a planned figure of sales broken down into various product groups".

Product Manager C2

The respondents did not indicate that product elimination features as one of the activities that comprised yearly product planning. In two cases where a link between yearly product planning and the product elimination decision was suggested, the link was rather tenuous, hinging upon the immediate plans to introduce new products:

"There are approximately 50 products on the price list. We might aim to introduce five in a year, and while we don't consciously take five off, there is a feeling about the size of the range and I can think of almost as many products taken off as we've put on in the past ten years".

Marketing Director A2

"We don't plan product elimination nearly enough. I don't think we sit down at budget time when we're planning and take lines that are not being successful and lay down the amount of money we'd save by stopping them. On the occasions where we have actually planned to eliminate a product, it has been due to the need to release resources for new projects".

Marketing Director A1

Three companies had continual rationalisation programmes which were acknowledged in the yearly product plans. Interestingly, the three companies in question were all experiencing a transitional stage from traditional product-markets to newer, larger and more profitable markets:

"Two years ago our bread and butter business was spring-wound clocks. By rationalising this declining sector we get longer runs and therefore increased profitability. We have a policy of rationalisation, it's part of our strategy as we move into new areas".

Product Manager C2

Rationalisation was not carried out as a yearly exercise in these three companies. It tended to be continuous, with people given specific projects to investigate, and it was served by a degree of formalisation. Such formalisation is revealed by the methods they had instituted for dealing with rationalisation:

"We use an 'obsolescence procedure' for the lines we are rationalising. Its essential for good financial control".

Product Manager C2

"Rationalisation is totally continuous. I have someone in my department, a product manager, who spends half his time on the subject".

Marketing Director B3

"Our most recent project was to involve production planning in rationalisation. We asked them to indicate the benefit they would expect to derive from eliminating any product they didn't want to produce. By benefit we meant tangible ones: answers like 'neater operation' wouldn't do".

Marketing Director A1

While these companies had set up structures for dealing with rationalisation, the extent to which such structures were used depended, not on the operational planning activities and decisions taken around "planning time", but on problems and issues raised through the control activity of the company.

In general, product elimination occurred as a result of the control activities of these companies, the product reviews. Similar in function to those executed by product groups, the reviews carried out by the "marketing group" were, for the most part, less formal than those of the "product groups" with fewer intervals between them. None of these companies was large:

"We don't have formal meetings - but we do discuss things for long periods of time. I suppose the nearest we get to any formal review meeting is our price reviews. We do that monthly and it's always done on the basis of margin. Poor gross margin focuses one's attention on sales".

Marketing Director A2

"We have monthly meetings of the marketing department, and very many informal ones. We're often here till 8 or 9 at night discussing the products".

Marketing Manager C5

"The marketing department meets monthly to discuss the performance of products versus the plan. The meeting involves me, the Marketing Director, the Sales Manager and Principal Accounts Manager. Everything has to justify its place in the catalogue".

Product Manager C2

"On a month-to-month basis we review performance versus the budget. Initially, it's volume-based and that's translated into profit".

Marketing Director A7

"Monthly, we look at sales and profit levels in relation to the plan. At that meeting, my Product Manager and Logistics Executive are also present. We analyse every item fully, although officially it's known as the rationalisation committee".

Marketing Director B3

"The main place for discussing any problems is a meeting which takes place every morning, chaired by me. It lasts about half an hour. There's no formal method of reviewing products' performance but in this way we do it informally, constantly".

Marketing Director A1

The control activity - the reviews - often highlighted products whose performance was dubious. In those companies concerned with stopping the proliferation of older products, control activities provided the forum for spotting slow-moving lines. More generally, control activities, which were geared to monitoring performance (rather than planning performance), provided the locus of detecting products not performing adequately. However, because a product's faulty performance was detected as a result of control activity, did not necessarily set the company in action to correct it.

Of the companies committed to keeping variety down, one seemed to be in a constant wrangle over rationalisation. The monthly and even daily debate surrounded two factors. The first was that although slow-moving products could be detected easily, the number of products generating small volumes was substantial enough to make a sizeable hole in overall volume, should they be dropped. The second was that the company was unsure of its ability to make savings from curtailing the product range. Eventually, it was an additional set of circumstances which precipitated action.

Another company making kitchen furniture often detected badly-performing products through their review procedures. However, their current drive for growth focused attention on the need for eliminating to be deferred until new models were ready:

"Product elimination candidates are easy to spot. Currently, there are five ranges we would like to discontinue. We've known about them for three to six months and we are planning to phase them out, but not in the near future because we've nothing to fill the place they're taking".

Marketing Manager C5

To summarise the issues relating to marketing-based planning and control, in the marketing group, product elimination does not seem to be catered for in the yearly operating plans. Only where there are plans for new or existing products which impinge upon the manufacture and marketing of marginal products, is product deletion considered as part of the yearly planning process and even then, in a somewhat indirect and secondary fashion. Contrastingly, the annual planning activities of larger organisation's product groups does encompass planning product elimination. This however, was limited to the elimination of "items" of a range rather than the entire range itself. Product groups were also responsible for executing control activity which led to the detection of dubious products. Whether or not action ensued immediately depended on the specific circumstances of the product in question. In the marketing group this phenomenon was also observed in relation to control activity.

6.2.4 Management-Based Planning and Control

Twenty respondent companies organised product planning and control using some form of management group. Seven of these companies used the Board of Directors, usually comprising Managing, Marketing, Finance and Production Managers. The 13 remaining companies used an

extended management group, comprising the Board, and other, less senior executives: purchasing, technical, design, personnel and marketing assistants. Companies that use extended management groups for their product planning and control are dealt with first.

6.2.4.1 Extended Management Mode

Three of the thirteen companies in this group used an extended management committee at one level of planning only: at the level of control. More accurately, the extended committee met frequently to plan and control the range, using strategic plans for guidelines. These companies will be included in the "control" section only.

In contrast to the marketing groups discussed above, responsibility for product decisions was widely diffused among the many functions represented in the extended committee. Some committees included product managers, but no one person or group of persons had control over product decisions. The extended managerial committee had several titles; "product planning committee", "product development committee", "operations committee". Many had no names at all.

Manufacturing products of paper and board, company B1 had a somewhat unique arrangement. It was based on "mill management" who worked in liaison with central management from headquarters, as their Marketing Director explains:

"At headquarters we present a company plan, setting the year's parameters. Those are then looked at by the mills who come back with what they see happening in their markets - and we amalgamate that into a company plan. The mechanism for doing that is when the members of the company Board go round the mill three times per year".

Marketing Director B1

Some quotes illustrate the structures used by other companies:

"Once a year we review where we are, what money needs to be spent on, and what capital investment is required. It's not one meeting. There'll be several: one to thrash out

volumes, another for design changes as well as ancillary meetings for personnel, materials etc. The process takes about two months. In the first instance, I forecast sales for the product lines. I will try to get agreement or disagreement on that, which comes from the Directors and General Managers of each department. If they reject this, we have a rethink and end up with a new forecast".

Marketing Director D5

"We review our performance all the time: formally, every three months, and at the end of each year I do a more detailed analysis to see where we stand against competition. This report is discussed, at planning time, by all the relevant parties: Sales Director, Managing Director, Home and Export Sales Managers and the Chief Engineer".

Marketing Director E3

"Product planning is certainly annual, but one tends to be involved all the time. Our objectives are adjusted annually, but we're always talking about it. It usually involves myself, production, design, merchandising and an information and pricing controller who is responsible for information activities".

Managing Director C7

The term "product planning" evoked "new product development" in the minds of many respondents. This featured strongly among planning tasks like setting volume targets, segmenting the market, listing tactics, and provided a forum for discussing product elimination. In contrast to those comments cited in the paragraph dealing with "marketing groups", the link between new product development and product elimination was more direct. A large company manufacturing domestic appliances (Company C3) had several mechanisms devised for NPD. New model conferences were held quarterly, were chaired by the MD and included the main Board Directors: Engineering, Quality Control, Product Managers and other specialist executives. In addition, they organised an R and D meeting twice yearly which was the forerunner of all major projects. Minor R and D-led improvements to products are dealt with continuously.

The implication of these overlapping NPD activities is that products do tend to be replaced frequently:

"We've eliminated a large number of products in the last five to ten years, mainly because we change our products quite often. In that period of time we've had four generations of washing machines and a lot of cleaners, which have also been revised. On the other hand, there are very few we've eliminated and not replaced. The only kind of elimination included in any plan is a replacement. By its very nature, if we kick something out because it's not performing, then that is a decision taken quickly. It doesn't need any planning".

Product Manager C3

A similar pattern was observed in companies C6 and C7, both viewing product elimination as part of the overall product plan when it is conducted as a replacement:

"Marketing keeps tabs on what's happening in the field and we work closely with design to see what trends are emerging. We have to anticipate trends if we are to update our major ranges once every two to three years".

Marketing Director C6

In these cases, it is the influence of consumer demand, itself largely influenced by fashion, which causes products to be replaced. In industry categories D and E, industrial components and heavy capital equipment respectively, the triggers for changing a product range may be different from those in category C, consumer durables. However, the effect is similar: relatively short product life cycles and frequent replacing of old products:

"New product development and product modification are crucial to us. Their relative importance largely depends on what need arises in the marketplace. In high technology that itself changes constantly. As for elimination - we don't do things that way round. We ought to address it more than we do, but it is a low, low second to the other activities...we don't do elimination for any of the strategic reasons we should. It's not part of product planning and we're not identifying when things should be dropped, unless it's because we're bringing something new in".

Product Manager D7
(Paraphrased)

"The vast majority of our eliminations have been planned through planning the introduction of a replacement. It hasn't been wrong, we haven't had a lot of products to drop, the need has been to increase the range and we've done a lot of new products which have been replacements, which form automatic eliminations. It's not easy to find examples which have been eliminated per se".

Marketing Director E1

Three of the ten companies stated that any product eliminations were written into their plans. The first of those, Company E2, producing earth-moving equipment, used a planning system whereby the number of products to be built was planned over a ten-year period, with specific quantities laid down for each year of the product's life. This plan, reviewed and adjusted every year, details the approximate dates of the last build, which could be altered to accommodate unpredicted rates of sale. In the second company, D5, producing automotive components, some decisions to withdraw a product were derived from the annual planning discussions:

"It may turn out during the discussion that a product line has no future at all, for a variety of reasons, in which case we say we need to get rid of it and the only question then is when and how".

Marketing Director D5

"We plan our elimination through our plans. We have to prepare income plans for the parent company. When income changes, or sales change or the sales mix changes - anything associated with the periphery of the balance sheet, we have to plan".

Sales & Marketing Director D2

Only in these three companies were decisions to drop a product completely, considered as part of the company's planning process. Otherwise, product withdrawal is planned only when it is due to occur as part of a product development project. Most of the companies directed the researcher to the level of the continuous control activity, to find the source of the product elimination decision.

In the main, control activities were carried out by the same extended managerial group. Activities were much the same as those carried out by product and marketing groups, the principal one being a review of performance:

"The annual budget states what we think we are going to sell in the next year. Once we get into that year's trading, we measure our progress against that and other criteria. If there's a shortfall on any one, that triggers alarm bells".

Product Manager C3

"We have product planning meetings every three months at which the Directors sit. We also have a monthly engineering-sales liaison meeting to thrash out day-to-day problems. We have a weekly meeting to keep track of stock figures, and a larger weekly shipping meeting where we discuss the week's sales".

Marketing Director E2

"We have monthly meetings which include the members of the Board and principal accounts managers, engineering and production people. They meet to discuss the performance of major products. In addition, each plant will review its performance and information relating to these meetings is available, broken down by customer and product line. Every three months we bring out a document detailing each product's return on assets employed. Should there be any alarming trend spotted, a further meeting of management will be convened".

Marketing Director D5

In company B1, it was the decentralised branch unit which carried out control activity:

"We operate as profit centres, each mill doing a monthly P and L account. For each of our mills, month by month, we know how much has been generated. Those are the first warning signs if a mill is not as forecast".

Marketing Director B1

Three companies were introduced earlier that did not have annual plans or annual planning meetings in the same way as the rest of the companies.

They tended to use frequent extended managerial committees in place of an annual re-assessment of their position and combined this planning function with on-going control:

"We have a product development meeting nominally once a month. It's an executive meeting including the MD, Sales and Marketing Director, Technical Director, Product Director, Sales Manager, Service Manager, Engineering and Line Managers. It's a big meeting - everybody gives an opinion here - and subjects range from ad hoc, today's issues, through to 'the problem with our range is that it lacks X'. Some decisions are long-term strategic and others are very short-term and could even relate to a specific order".

Sales & Marketing Director E5

"There's never any shortage of opportunities and ideas. The planning committee meets once a month, which is made up of the R and D Director, Chairman, Sales Director, Chief Sales Engineer, Purchasing Manager, Accounts. They are responsible for new products, modifications to existing products, reviewing performance and making adjustments to meet strategic objectives. New product development is undoubtedly the important factor along with modification. Product elimination is really a corollary of these two".

Marketing Manager C4

The extended managerial meeting, in its capacity as a control body, would often provide the opportunity to raise suspicions about products. This could ultimately lead to a product's withdrawal or replacement, depending on the circumstances. It could not be said that these meetings were the locus of the product elimination decision, but often they set in motion the process described in the conceptual framework. None of the eliminations starting from these meetings were "planned" - had companies not been experiencing problems with the products they would not have been withdrawn:

"The fact that most eliminations we've done have been as a result of variance from plan, shows a symptom we've had of not looking at it strategically".

Product Manager D7

"We do monthly and quarterly reviews on the gross margins we've achieved for every product. If there's a continuous drop, then we look to see why..."

Chief Executive E3

"Every month we have a meeting where we look at every range we've got - looking at how it is performing and asking why it's not performing. I go to the Design Director prior to that meeting and get a list of what we call 'potential droppers' - which is basically a list of designs, the poorer sellers in a range. At that time, I collate background information - how many rolls we have, how much yarn is in stock, and other facts we need to make a decision".

Product Planning Manager C6

By way of a summary then, extended management committees or meetings embraced the question of product elimination in two ways. Firstly, the relationship between new product development and product elimination was felt to be strong, as witnessed by the quotations of companies E1, D7, C6 and C3. These companies planned for new products and simultaneously planned the withdrawal of older ones. Secondly, three companies planned elimination independently, during the "annual planning time".

Control activity seemed to pick out quite adequately those products whose performance was dubious. Whether this led to considering the product's withdrawal depended on the specific circumstances of the product.

6.2.4.2 The Board Mode

The final mode of planning and control to be considered, is that which involves the Board of Directors. Unlike the three previous modes discussed above, planning and control were not always carried out by the same group of individuals. Of the seven companies whose Board of Directors handled the yearly plan, two had their control activities run by "lower" committees. The five companies who did have both planning and control functions performed by the Board were all small companies. Also in this category are four of the

six companies who did not have long-term plans. In the planning mode, the yearly plan was often referred to as the budget:

"We work on the normal 12-month budgeting system, where we estimate sales for the next year. That document gives us guidance".

Product Planning Director D6

"To compile the annual plan, we at the Board draw from marketing their sales forecasts; from production their estimates. If the two do not equal, it immediately raises the question of capacity and new models. We get information from departments but the decisions are made by the Board".

Managing Director C1

"Objectives like return on capital, profit contribution, expenses levels are all included in the budget. It's done yearly and we look at how we've performed in a six-month review".

Managing Director A6

Given that responsibility for planning the product range was concentrated in a relatively small number of people, who were also instrumental in setting overall objectives, it might be expected that the yearly planning activities provided a good setting for raising the question of product withdrawal. However, where elimination was planned, it was for the very same reasons found in other planning modes, and the most common reason was the development of a new product. Two companies emphasised this aspect, and although their logical and structural bases for developing new products differed, they nevertheless served to plan elimination. The first of these, Company C1, normally initiated NPD to achieve the necessary growth levels:

"In practice, we forecast what is going to become weak so that we have a replacement there, waiting in the wings".

Managing Director C1

The second company is obliged to review ranges in line with trade fairs:

"As we approach the year end we have a number of meetings at which we begin to gather information about what has been selling. We launch a new range each year, with a new catalogue and price list. Take paperweights as an example. For the next year, we put alongside the product 'OUT' 'MAYBE' or 'IN' - that's based on past sales, and at this point, what the sales are likely to be for the next year".

Managing Director C8

A large manufacturer of vehicle components, Company D6, had instituted an active policy of variety reduction. While this policy had achieved the status of a Board issue, being controlled by the Chairman, it was not, in practice, a yearly exercise, but a continuous one, independent of other planning activities:

"At the moment our objective is to halve our stock. The MD, the Marketing Director and myself attend a meeting every two and a half weeks to consider the stock situation".

Product Planning Director D6

The procedures in this company are similar to those companies who were discussed in paragraph 6.2.3.2, where a continuous rationalisation programme was served by a degree of formalisation. In the other four companies comprising this sector, elimination was a question addressed almost entirely through their control mechanisms.

Controlling performance in these seven companies followed a pattern similar to those described in all other modes. A number of meetings were held at regular, frequent intervals to discuss the progress of product performance:

"We have Board meetings where the monthly accounts are discussed. We also get contribution figures weekly from the computer. The sales figures are broken into profitability, to see to what extent we're meeting objectives. The meeting takes place at 2-4 week intervals".

Managing Director A6

"A lot of our discussions of product performance are on an informal day-to-day basis, because we see each other constantly. But we also have executive meetings when we do identify things that need to be discussed".

Managing Director D1

"There are a large number of controls in the company - financial, production etc. We can always see how we are proceeding against our budgets. We forecast every three months during the year, so that way we look at how things have changed. There's constant scrutiny, which allows us to take tactical steps".

Marketing & Sales Director D3

"I think the monthly Board meeting is where we'd tie all the various reviews together. Prior to that Board meeting, each of the divisions has their own internal meeting on the basis of which the Director will make his report".

Managing Director C1

In these companies, product elimination occurs largely as a result of control activities. However, as with the previous groups discussed above, detection of a problem does not mean that action ensues. What does happen is much more related to the specific circumstances of the firm in general and the product in particular. For example, Company D4, a small company manufacturing scientific test equipment has a rather narrow product range which inhibits product elimination:

"We don't plan to drop anything at all. We are usually faced with falling demand which means, at the monthly management accounts meeting - where it's most likely to come to light - we have to analyse back, drawing graphs and the like. Our first reaction is often to do anything to keep it alive rather than drop out".

Managing Director D4

Another company found its urge to drop products dampened by their option to offer the product as a "special" - a tactic first reported by Avlonitis (1983):

"I wouldn't say that as a regular discipline we go through a product audit. We'd only go through an audit to remove certain products from the standard listing...but we make sure people know it's available - at a price".

Marketing and Sales Director D3

These aspects and more which relate to the factors that are pertinent to the product elimination process are fully discussed in other sections dealing with the various stages of the process. What is being stressed here is that often the origin of the product elimination process is to be found in the control, rather than in the planning activity of the firm:

"Product elimination is quite separate from overall product planning. It's a conscious decision based on circumstances, rather than thinking something is going to happen, planning and reorganising it in advance".

Managing Director A6

6.2.5 Summary

The major aim of this section has been to explore where product elimination finds its place among the companies' product planning activities. To do this, the elements of product planning had to be defined as they exist in the respondent companies and the organisational housing for these activities had to be described.

Two major kinds of product planning activity were identified. The first was annual, comprising a review of the past year's performance, setting product objectives for the current year and detailing the tactics to be used in achieving targets. The second was more frequent, amounting to a weekly or monthly review of a product's performance versus the annual plan. Naturally, "control activity" spanned a host of issues like operating variances and expenses levels, however, of primary interest were product review activities.

The ways in which the respondent companies organised themselves for product planning and control were categorised into four modes, using a

somewhat academic structure. Two of these modes were based on the Marketing function, namely the Product Group and the Marketing Group. The remaining two modes were Management-based, namely the Extended Management Group and the Board of Directors.

Product elimination was found to be executed as part of overall product planning in a number of instances. The first of these was where the product ranges had a tendency towards "long tails". This was a phenomenon observed mainly in those companies using marketing-based planning modes where expanding varieties of product is the corollary of mature products in mature markets. A second example of "planned elimination" is where NPD features in the year plan. Such an arrangement was apparent in three of the groups, the exception being "product groups" whose NPD is carried out at a higher organisational level. Elimination, in the form of variety reduction or range rationalisation, is incorporated into the year plan as a statement of policy or as an objective, but it should be stated that the policy is likely to be administered at the "control level". Finally, three companies actually planned elimination, as they would any other change to the range. In one of these companies this was done as part of the ten-year product plan; in the other two it was done to notify the parent company of a change to the range.

It is felt that product plans concentrate on products, existing and potential, that will increase the revenue of the company, and that conceptually they are not oriented for product elimination. Clearly, further refining is necessary to unearth the precise nature of product planning and its implications for product elimination.

The various firms' review committees, the main bodies used for controlling product performance, were the principal venues for raising the question of product elimination. This implies that elimination is considered to be largely ad hoc, confirming that the year plan has little to do with it. It is the control activity which is used to activate any rationalisation policy which may be in operation in the sample companies.

However, it should be stated that because a potential elimination is highlighted through the control meetings does not mean that an elimination will occur. What happens to an elimination candidate is due to a number of independent factors, or product-specific factors which cut across the four groups of planning and control. Independent factors might be, for example, a narrow product or customer base, or a facility offering "specials". Product-specific circumstances include the availability and feasibility of corrective action, or whether the product can be justified on marketing grounds, as in the case of a loss leader. Such factors will be discussed in relation to the part of the decision upon which they impinge.

Section 6.3 Precipitating Circumstances

6.3.1. Introduction

Recent empirical research into product elimination has repudiated the earlier normative assumption that all decisions to drop a product from the range are based on unsatisfactory sales and profits (Avlonitis and James 1982; Salerno 1983; Gauthier 1985). Yet, not all "weak" products or "mature" products are suitable for withdrawal, and not all withdrawal candidates are "weak" or "mature" products.

Avlonitis and James (1982) brought to light eight "problem situations" which trigger the elimination of a product. Salerno (1983) witnessed that a product may be deleted, either due to factors inherent in the product, or through external stimuli, such as the development of a new product. It has also been suggested that the circumstances which precipitate the elimination of a product actually influence the way in which the decision is executed (Avlonitis 1983). The last point, however, has not been systematically analysed, and therefore examining the effect of the various precipitating circumstances on the decision-making process is one of the major thrusts of enquiry in the current study.

Prior to investigating relationships between the precipitating circumstances and the decision-making process, it is necessary to acquire the broadest understanding of the nature and scope of the precipitating circumstances. This section is concerned with presenting and explaining the circumstances that precipitate product elimination across the spectrum of British Manufacturing Industry. It is also concerned with examining the possible effects of different strategic emphases on the occurrence of the various precipitating circumstances. The following sub-section seeks to explain each of the precipitating circumstances by describing how each has caused a deletion in the respondent companies.

6.3.2. The Precipitating Circumstances - An Overview

The respondents were asked to explain the various circumstances that had caused them to drop products over the last five years. Analysis revealed 17 different stimuli that trigger the product elimination process and these are illustrated by specific examples. Table 6.3.1 shows the precipitating circumstances.

6.3.2.1 Government Policies and Regulations

A medium-sized company distilling alcoholic beverages (Company A7) operates internationally. When the United Kingdom joined the EEC, the management was forced to comply with article 86 of the Treaty of Rome, which seeks to establish the free flow of goods among member states. Under the article, Company A7 was accused of operating a two-tier price system, and took the decision to eliminate the product from the UK. The alternative course of action was to modify the price. However, the consequences that this entailed for their product positioning, policy and pricing, would have resulted, not only in operational problems with respect to the financial structure of the company, but also in marketing problems, as the differentiation between the company's products would have been reduced, causing confusion and even cannibalisation.

6.3.2.2 Operational Problems

A small company manufacturing cakes and biscuits (Company A2) distributes its products mainly through the multiple retail chains. The common struggle for all manufacturers selling to the consumer through the multiples is the struggle for shelf space. The amount of shelf space allocated to a manufacturer is a crucial determinant of sales volume, all other things being equal. Another important factor is the presentation of the product mix on the shelf. Company A2 explained that, often when a new product is introduced, the trade does not agree to increase the amount of shelf space, and rather than change the presentation of the product mix on the shelf, a product is dropped.

Another small company manufacturing flexible tubing (Company D3) experienced production problems with a product which appeared

Table 6.3.1 The Precipitating Circumstances in the Sample Companies

	<u>Company</u>	<u>Total</u>
Government policies and regulations	A7	1
Operational problems	A2; A3; D3	3
Third party decisions	A6; A5; C5	3
Competitive activity	A3; C3; D3; D5; D6; E3; E6	7
New product development	A2; C1; C3; C4; B2; C5; C6; C7; C8; D7; A5; E1; E2; E4; E6	15
Resources required elsewhere	A1; C7	2
Problems associated with raw materials	A4; B1; C2; D3; E1	5
Development of an active variety reduction policy	A1; A4; A6; B2; B3; D6	6
Declining market potential	A3; A5; A4; A6; C4; D7; E1; E2; E6	9
Poor sales performance	A1; A2; A3; A4; A5; A6; A7; B2; C1; C2; C3; C4; C6; C5; C8; D4; D5; D6; E1; E6	20
Poor profit performance	A2; A3; A4; A6; B1; D6; D4; D7; E3; E4; E6; E2	12
Poor product quality	A2; C4; D7; E3; E2	5
Poor fit with company capabilities or strategic plans	A3; A5; C3; D1; D2; D4; D7; E2	8
Rationalisation due to mergers and acquisitions	B3; C6	2
Poor fit with company image	C3; B3; E6	3
Parent company decisions and policies	B3; D2; D5	3
Change in exchange rates	B1; E5	2

insuperable, resulting in a poor quality product which had to be produced in large batches in order to retrieve lengths of tubing whose quality was satisfactory. This in turn led to extremely high costs which could not be offset by correspondingly high prices due to a number of market forces. The problem was "solved" by deleting the product.

Generally speaking, a number of companies expressed the view that the elimination of certain products in their range would eradicate several operational problems they were experiencing. However, as was discussed previously, a lack of appropriate financial data and the prospects of a loss in turnover often mitigated this tendency.

6.3.2.3 Third Party Decisions

A small manufacturer of kitchen fittings and furniture (Company C5) designed a kitchen exclusively for a major home furnishings retailer. When the retailer decided to come out of this segment of the market, the company decided to drop the product. The company accepts the inherent risk of supplying "own brand" products to retailers, a risk allayed by the fact that often what differentiates one own brand from another, the finishings rather than the fundamentals of the products.

Another facet of "third party decisions" again stems from the struggle for shelf space. Many major multiple chains have themselves a "minimum standard" of sales which products must achieve to be allowed shelf space. This is particularly precarious for small companies who rarely have the position to bargain for space, as do the Unilevers, Nestlé's and Procter and Gambles.

6.3.2.4 Competitive Activity

A small manufacturer of petfoods (Company A6) was forced to pull out of a range of flavoured pet chews when one of the big companies entered the market with lower costs and prices, derived from their economies of scale.

A small manufacturer of flexible tubing (Company D3) was experiencing difficulty in meeting demand for tubing for a swimming pool. The entry of a similar competitive product at a lower price virtually halted demand for Company D3's product. They were forced to honour existing orders, delete their product, install greater capacity tooling and begin again.

6.3.2.5 Development of a New Product

A large manufacturer of electronic testing equipment (Company E6) experiences relatively short product life cycles due to the high technology content of its products. Product-market managers overview the development of a new or improved product, its introduction into the market and the subsequent withdrawal of its predecessor.

In addition to the introduction of a direct replacement or "second generation product", the development of a product unrelated to any existing products may still cause an existing product to be deleted. The marketing department of Company A2 was aware of the need to keep the product range down to a certain number, and the development of a product in one category often led to the withdrawal of a product in another category. This was viewed as a "substitution".

6.3.2.6 Company Resources Required Elsewhere

A small manufacturer of fresh and frozen foods (Company A1) was compelled to drop a low-volume but high-profit line, to make way for future developments in an expanding sector of food products.

The Marketing Director commented, however, that a vastly successful product line would not be deleted for this reason. The decision represented a strategic trade-off, where logic compelled that a reasonably comfortable product of the present had to be sacrificed for greater future achievements, since resources and capital for expenditure were scarce.

6.3.2.7 Problems Associated with Raw Materials and Parts

A large company manufacturing confectionery (Company A4) deleted a product when the price of a major ingredient increased to such an extent that the increased cost could not be adequately recouped by an equivalent increase in price. The increased cost of the ingredient was due to a bad harvest in South America where it is grown.

Company E1, a large manufacturer of milling machines, is occasionally in the position of having to discontinue a machine if the electronic computer control component is discontinued.

6.3.2.8 Development of an Active Variety Reduction (Rationalisation) Programme

A manufacturer of automotive components (Company D6) has developed an active policy to reduce the variety of different parts held in stock. Over the years, a phenomenal number of different parts had accumulated in the warehouses, since, for every new model or limited edition brought out by the car manufacturers, a new or modified component had been fitted. Reducing the variety was a task they tackled in two ways. Firstly, they evaluated the breadth of components, appraising the functional differentiation among similar parts. Where a component part could be used satisfactorily in more than one vehicle, the slow-moving superfluous part numbers were eliminated. Secondly, where customers were insistent upon supplies of a specific part number, a minimum quantity had to be ordered.

Company A4 also had a policy of rationalisation, but rather than being handled continuously, product lines that had become somewhat unwieldy over a period of two to three years would be cut to more manageable proportions.

6.3.2.9 Decline in Market Potential

Company E1 had, for the period 1975-1983, systematically replaced its manually-controlled milling machines with computer-controlled versions, to reflect the decline in the traditional market and the growth in the new one.

Company A3, a manufacturer of instant food and beverages, dropped a product after many years because they finally became convinced that the market had no interest for the product, and that the quest for sales in that product category was futile.

Company C4, which manufactures domestic heating equipment, dropped one of its products after identifying a decline in the market for solid fuel, the market for which the product was uniquely designed. The Marketing Manager explained that, although they could have carried it on, it would have quickly become a liability.

Company A5, a processor of milk and other dairy products, dropped a product which had been experiencing low sales where similar competitive products had increased both sales and market share. The problem of low sales was exacerbated by the fact that multiple stores were beginning to question the viability of carrying the range.

6.3.2.10 Poor Sales Performance Despite a Generally Viable Market

Company A4, a large manufacturer of chocolate and sugar confectionery, recently eliminated a fudge-and-fruit bar simply because sales had fallen below acceptable levels. The product was run out over one year.

Probing the respondents regarding the products that had experienced poor sales uncovered another permutation of the "poor sales" category of precipitating circumstances: the failure of a relatively new product. The point at which management should give up on sluggish new products is possibly more difficult to ascertain than in the case of products which have reached the maturity stage of their life cycle. For this reason, a certain amount of doubt regarding the correct course of action seemed to remain with the respondents. This led to a reluctance to talk about the products as "unsuccessful new products", but careful analysis of the interview transcriptions, paying particular attention to the length of time the product had been in the market-place vis-a-vis "normal" life cycles in the industry, allowed us to determine whether "poor sales" referred to the performance of an established product or a new product.

In order to investigate this more fully, particular attention was paid, during the product-specific part of the interviews to the length of time a deleted product had been marketed. Table 6.3.2 shows that, in fact, eight of the fifty elimination case histories are unsuccessful new products, with lives of between eight and thirty-six months.

6.3.2.11 Poor Profit Performance

Company B1, a large manufacturer of conversions of paper and board, deleted a product whose cost base was increasing, but whose profitability could not be maintained through higher prices due to the company's competitive position. In fact, an attempt was made to hold profit levels steady by increasing the price, but this only led to lower sales volumes, smaller batches and increased costs.

Company E3, a medium-sized manufacturer of pumps, winches and marine propulsion units, dropped a product which was not only low in sales but which was actually making losses. Although time was taken to decide the fate of other low-volume lines, this winch was dropped immediately.

6.3.2.12 Poor Product Quality

The Marketing Director of a small company manufacturing cakes and biscuits (Company A2) claimed that where they were dubious about product quality they would take a product out of the range. Of course, it must be stated that few, if any, "bad quality" products are immensely successful, yet the awareness is there to delete any product not properly reflecting the quality standard of the brand name.

The Product Manager of a large company manufacturing fibre optic connectors (Company D7) dropped a product that was low in quality and specification, and which, correspondingly, was manufactured on old production lines and therefore suffered from high manufacturing cost variances. The decision was taken to transfer the resources (people and space) to better projects.

6.3.2.13 Poor Fit with Strategic Plans and Company Capabilities

The General Manager of a large manufacturer of instant food and beverages (Company A3) explained how strategic plans for factory rationalisation and changes had, in the past, resulted in the elimination of products.

Company C3, manufacturers of large domestic appliances had, at one time diversified into smaller home appliances, such as irons and kettles. Management had, however, discontinued these lines, as its lack of experience, both in manufacturing and marketing these products, appeared to blunt their competitive edge.

6.3.2.14 Rationalisation due to Mergers and Acquisitions

A medium-sized company in the carpet industry (Company C6) took over another manufacturing outfit of similar proportions. As a result, the company had two sets of product lines containing similar products manufactured and marketed to the same market segments. They set about rationalising these two sets of product lines into one logical and attractive mix of products.

A medium-sized manufacturer of drawing office equipment (Company B3) was taken over by an international company operating in the same and related markets of office equipment. The international company set about its long-term planning, defining company mission and strategic objectives. They were keen to eliminate duplication on the one hand and to move from traditional products to modern products on the other hand. A third intention was that slowly, over a number of years, the whole company would come out of those markets which were not designated for future attention. All three decisions had massive implications for eliminating products in the British company, but many deletions occurred because of duplication.

6.3.2.15 Poor Fit with Company Image

Company E6, a large manufacturer of electronic testing equipment replaced a product which had been in the catalogue for eight years - somewhat long for the electronics industry. When the initial concern was raised, it was largely due to the fact that the product did not reflect the up-to-date, pioneering image the company sought to foster. It should be said, however, that the final straw triggering management into action came when the competition launched a new product.

A similar situation was experienced by Company C3, a large manufacturer of domestic appliances. While its sales and market share were stable, largely because of its reputation, managers felt the range was becoming surpassed by competitive products. They decided to replace the range with a new line more commensurate with their image objectives in the marketplace.

6.3.2.16 Parent Company Decisions and Policies

A manufacturer of automotive components (Company D5) was instructed to cease production by its parent company who wanted to move all production of the particular product to one European location, in Spain. The example given above of company B3 also indicates how parent company decisions and policies can force subsidiaries to drop products.

6.3.2.17 A Change in Exchange Rates

A manufacturer of wood- and metal-cutting saw blades (Company E5) exported a product to West Germany. The value of sterling increased, effectively increasing the price of the product to the West Germans. The company knew that if they did maintain the selling price they would have to cease producing the product as the customer would refuse to buy at the increased price. So, while technically leaving the decision to the customer by increasing the price, the company eliminated the product and lost £250,000 of business.

Company B1, a large manufacturer of conversions of paper and board, has had to drop products in the past because of a fall in the value of sterling. The timber used to make paper is bought exclusively from North America and Scandinavia and increases dramatically in price when the value of the pound decreases. The obvious consequence for the company's products is an increase in price, which in some cases causes the product to become uncompetitive, and so it is dropped.

6.3.3. The Precipitating Circumstances - Some Observations

These 17 precipitating circumstances were uncovered through a thorough investigation of each company's product elimination activities over the past five years. Table 6.3.1 presents the aggregate findings, but should not be regarded as a reliable frequency table, nor should any inference be drawn regarding the relative importance of the precipitating circumstances.

Leaving aside the more general pitfalls associated with any interview survey, a number of specific points should be borne in mind. Firstly, as some of the respondents had not been with the company for as long as five years, a cross-comparison of numbers of products eliminated, and their precipitating circumstances is not advisable. Secondly, the business of deleting products is not always particularly memorable, and it is therefore highly likely

that one or more "inconsequential" deletions be "lost" among the many other, perhaps more exciting, decisions that have to be taken over a period of five years. Table 6.3.1 is intended to portray the character and mix of precipitating circumstances that can be experienced. In addition, quantification of interview data usually entails a loss of richness and depth of information and the table should be viewed with regard to two extremely important qualifications: a) overlap; b) combination.

a) Overlap

A closer look at an elimination decision in Company D3 serves as a good example of overlap. This company manufactures rolls of flexible tubing, silicon tubing being one example. This type of duct is used in the automotive and aircraft industries and is subjected to very high and very low temperatures. Production started to report problems in manufacturing the ducting to a consistently high standard, which meant that the quality of the product could not be guaranteed to a market where quality is crucial. The company was unable to ascertain the reason for this problem, although it believes the problem originated in a change in the quality of the silicon rubber used to manufacture the product. In such an instance there is an overlap with three precipitating circumstances: "operational problems"; "problems associated with raw materials and parts"; and "poor product quality". The silicon ducting was eventually replaced by another product.

Another, more common overlap is encountered with regard to New Product Development. While the development of a new product often leads to the deletion of an existing one, it is often the detection of a weak existing product which leads to the development of a new one.

b) Combination

More than one precipitating circumstance may work in concert, triggering the decision to eliminate a product. Company B2, a large manufacturer of wood-free paper, produced a product which experienced rather stagnant sales. In healthier economic times, this would not have posed a problem, but a recent managerial decree had emphasised the need to increase market share as the only way to meet strategic objectives in a mature, static market. The decision was taken to reposition several related brands with the resultant elimination of the brand in question.

The investigation in hand has added to previous work dealing with those circumstances that cause management to drop a product, other than poor sales or poor profits. The pioneer of the "problem situation" was Avlonitis (Avlonitis and James 1982), who discovered eight: government policies and regulations; changes in third party specifications; parent organisation decisions and policies; decline in market potential; poor product performance; development of a new product; rationalisation due to mergers and acquisitions and the development of a variety reduction policy. Some of these eight "problem situations" were confirmed in a recent study by Gauthier (1985), looking at the product elimination decision in French manufacturing companies. Specifically, he relates examples of "government policies and decisions; changes in third party specifications; poor product performance (which he entitles "old breadwinners") and the development of a new product. This last "problem situation" Gauthier refines into three types of "new product development", which, he argues, are necessary for an understanding of different types of product elimination decision. He suggests that new products may be developed because it is necessary for the survival of the company; because management wants to replace a product or because R and D has independently "discovered" a new product idea. In the current investigation, the first two of these are classified in terms of the original trigger for "needing" or "wanting" to develop a new product - such as competitive activities or poor product quality.

The newer "problem situations" found by the present investigation are as follows: operational problems; competitive activity; resources required elsewhere; problems associated with raw materials or parts; poor product quality; poor fit with company capabilities or strategic plans; poor fit with company image and change in exchange rates. In addition, we have separated "poor product performance" as defined by Avlonitis (1980) into "poor sales performance" and "poor profit performance". When referring to the 50 elimination case histories, a separate category of "unsuccessful new products" has been recognised. Gauthier (1985) also identified this particular cause of product deletion.

It is proposed that the primary reason for generating nine additional triggers to the elimination process was that there were more companies interviewed over a wider range of industries. However, since several of these triggers are not, strictly speaking, "problems" but rather a set of circumstances which has precipitated the deletion of a product, they are largely referred to as "precipitating circumstances".

Table 6.3.2 shows the range of precipitating circumstances that triggered the deletions described by respondents in the product elimination case histories. While each of the 50 case histories was described in detail, this only served to underline the complexity of the precipitating circumstances, and although a particular trigger was chosen by each respondent, the important qualifications of overlap and combination cannot be dismissed. Indeed, in order to classify the product deletion case histories, some judgemental grouping of precipitating circumstances has taken place. The "unsuccessful new product" category has products that were poor in quality, sales and profits. It also includes products which did not fit the company's image or strategic plans. The "rationalisation" category includes products eliminated due to an active variety reduction policy and due to mergers and acquisitions. "Poor profits" does not appear entirely on its own,

but rather as poor sales and profits. This includes products that were, or were close to losing money as well as having low volume. These cases are separated from "poor sales only" products whose sales and/or profits were lower than expected, but not actually causing a cash drain. These have been separated because of the implications they have for the content of the decision, which is explored in subsequent sections.

Table 6.3.2 Precipitating Circumstance in the Case Histories

<u>Precipitating Circumstance in the Case Histories</u>		<u>Total</u>
Poor sales only	A1; A5; A4; A7; A4; C1; C1; C2; C6; D5	10
Poor sales and profits	D6; E2; E3	3
Rationalisation	D6; C6; B3; B3	4
Unsuccessful new product	A1; A3; A6; C2; C3; C5; C8; E4	8
New product development	A2; A5; C5; B2; D7	5
Declining market potential	A3; A6; C4; D2; D2; D7; E1; E6	8
Poor product quality	C4; E2; E3; D7	4
Competitive activities	D5; D3; E6; C3	4
Change in exchange rates	B1; E5	2
Resources required elsewhere	A1	1
Problems with raw materials	D3	1
TOTAL		<u>50</u>

6.3.4. The Effect of Strategic Planning on the Precipitating Circumstances

Despite the problems of classification, a closer look at Tables 6.1.3, 6.3.1 and 6.3.2 reveals some interesting, if somewhat speculative, relationships between the circumstances that precipitate a company's product elimination process and the strategic planning orientation developed in Section 6.1. These tentative associations are shown in Table 6.3.3. Associations between the precipitating circumstances and industry category are also discussed in the following paragraphs.

Table 6.3.3 Precipitating Circumstances and Strategic Orientation

	Growth	Finance	Marketing
1 Government policies & regulations			
2 Operational problems			
3 Third party decisions			
4 Competitive activity			
5 New product development	X		
6 Resources required elsewhere		X	
7 Problems associated with raw materials			
8 Active variety reduction policy		X	
9 Declining market potential			X
10 Poor sales performance			
11 Poor profit performance			
12 Poor product quality	X		
13 Poor fit with strategic plans/ capabilities			
14 Rationalisation due to mergers			
15 Poor fit with company image			X
16 Parent company decisions and policies			
17 Change in exchange rates			

* Associations are not statistically significant, but based on the raw data underlying Tables 6.1.3, 6.3.1 and 6.3.2

6.3.4.1 Development of a New Product

Fifteen sample companies reported that the development of a new product had led to the elimination of an existing product. Seven of these companies manufactured consumer durables (Industry C) and four produced capital goods (Industry E). The phenomenon, common to both industries, which accounts for NPD being a reason for product elimination is that of comparatively short product life cycles. Industry C is faced with changing tastes and fashion cycles which filter through over a period of 3 to 5 years. Industry E, on the other hand, is under pressure to modify or replace existing products by incorporating new and improved technology into the product range. Indeed, it was only in industry category E that respondents reported the use of the PLC concept or the Boston Consulting Group growth/share matrix as aids to managerial decision-making. Such an observation leads to the contention that NPD is more important in triggering product elimination in companies manufacturing both consumer durables and capital equipment.

In addition, twelve of these companies emphasised the importance of growth-related strategic objectives, which suggests that companies who are committed to growth are more likely to eliminate products due to new product development than those more oriented towards finance.

6.3.4.2 Company Resources Required Elsewhere

Only two companies discontinued a product in order to free resources for alternative opportunities. One of these companies (Company C7) stressed the importance of finance-related issues in its strategic plans, while the other, (Company A1), although not carrying out strategic planning, was concerned to curb capital outlay in order to maximise profit from sales. These facts appear to strengthen the intuitive proposition that where profit objectives are paramount, eliminations are more likely to occur to free physical and human resources for future endeavours, than where strategic plans emphasise marketing objectives.

6.3.4.3 Development of an Active Variety Reduction Policy

The six companies who dropped products in accordance with a variety reduction policy spanned industries A, B, C and D. Three of these companies stressed the importance of finance-related issues, which allows the tentative suggestion to be made that variety reduction is an attractive proposition for firms concerned primarily with profit contribution.

6.3.4.4 Decline in Market Potential

Of the eight companies citing "decline in market potential", four were involved in strategically defining product-market strategy, which allows greater anticipation of market trends and alerts management much earlier to those product-markets it might wish to abandon.

6.3.4.5 Poor Fit with Company Image

The two companies that dropped products because they were incompatible with the company image, were concerned, at the strategic level, with their image or reputation. They were also greatly concerned with other strategic marketing issues, such as forecasting market size and share. It follows that companies who groom their image or reputation and that are concerned with strategic marketing issues, are more susceptible to dropping products due to a poor fit with company image.

6.3.4.6 Poor Product Quality

Of the five companies stating that poor product quality has led to deletions, two companies planned for new products at the strategic level and stressed the strategic importance of market share. Thus, it can be tentatively stated that where New Product Development or maintenance of market share is strategically important, companies are more likely to drop products due to poor quality.

6.3.4.7 Parent Company Decisions and Policies

It is somewhat axiomatic to expect this precipitating circumstance to affect subsidiary companies! The three companies that claimed to have dropped products due to parent company decisions and policies were all subsidiaries of large, international corporations.

6.3.5. The Precipitating Circumstances and Their Effect On Product Elimination Behaviour

The current study's findings support the findings of other empirical work which repudiate the normative approach to product elimination. In the sample companies, product elimination was largely carried out in response to problems, although the responses themselves often laid down policy and were systematic.

Avlonitis (1980) postulates that, in engineering companies, product elimination decisions tend to evolve because of coercion by external forces, development of a new product or ad hoc elimination studies. The current study proposes a modified classification to accommodate the effect of strategic planning on product elimination and the observed phenomenon of the unsuccessful new product. It is tentatively suggested, therefore, that in British manufacturing companies, product elimination occurs as a result of a) Crisis (precipitating circumstances 2, 4, 10, 11, 12), b) Company policy (precipitating circumstances 6, 8, 9, 13, 15), c) Development of new and improved products (problem situation 5), d) Coercion by external forces (1, 2, 7, 14, 16, 17), e) The unsuccessful new product.

This classification is not only subjective, but also fraught with the problems of overlap and combination dealt with above. To eradicate this judgemental element and to gain further insights, the underlying structure of the 17 precipitating circumstances will be quantitatively examined in the mail survey stage. This said, there does seem to be some grounding for these five product

elimination categories, as each one received different amounts of attention at the various stages of the decision. By way of example, eliminations carried out due to coercion of external forces were generally paid less attention in the analytical stages of the decision and great effort was devoted to effecting an orderly withdrawal of the product from the market. When a product was deleted due to some aspect of company policy, there was generally little attention paid to consideration of corrective action. These tentative observations will be fully explained in the sections dealing with the decision-making process per se.

6.3.6 Summary

This section has described a number of situations that cause managers to consider dropping products. They have been called "precipitating circumstances" and number 17.

To ascribe the cause of a product deletion to any one of these 17 precipitating circumstances is difficult because they are prone to overlap, and sometimes act in concert.

Although somewhat speculative, the qualitative data suggest that strategic issues do have some influence on the reasons why products are eliminated.

In addition, the evidence provided by the interviews indicates that there are broad types of elimination which can be categorised according to their precipitating circumstances, and which might receive differing amounts and types of attention during the decision-making process.

Observations of this nature are tentative and require further exploration during the mail survey stage.

Section 6.4 The Identification of Product Elimination Candidates

6.4.1 Introduction

In the two previous sections we have examined the precipitating circumstances that trigger the product elimination decision and the forums of planning and control which bring these circumstances to light.

Attention is now turned to the issues that feature in the planning and control meetings and that focus managerial attention on the "problem situations" or "precipitating circumstances".

According to the literature reviewed in Chapter Three, a product elimination candidate may be identified in one of the following ways:

- (i) When a crisis presents itself to management requiring immediate attention,
- (ii) When formulation of strategic plans reveals a product ill-suited to strategic objectives,
- (iii) When an opportunity is spotted for enhancing company performance,
- (iv) When a product falls below a level of performance acceptable to management.

Each of these four situations would be alerted to management in a different way. For example, where a crisis arises, there is little need to address actively the question of identifying elimination candidates. If a third party changes the specification of a product, or decides not to purchase at all, it will inform the manufacturing company of its intentions. Similarly, where the parent group board takes a decision that affects the product line of a subsidiary, the subsidiary will be notified by headquarters. A sudden change in exchange rates will make itself felt in the company with heavy exporting commitments.

If these and other "crisis" situations present themselves, the affected company does not require a systematic procedure for the recognition of elimination candidates. However, other situations may well originate within the company, and a number of factors may be used to indicate their incidence. The normative view presents such factors as "review criteria" - criteria used to review or audit the performance of products. Prescriptive models also suggest the extensive use of minimum standards of performance and product objectives to detect any product elimination candidates. In keeping with the suggestions of normative writers, and to validate (or otherwise) the findings of other research in the field, an attempt was made to gauge the usage of "minimum standards", "product goals" and "review criteria" in identifying product elimination candidates.

6.4.2 Minimum Standards of Performance

Eighteen companies reported to have minimum standards of performance relating to minimum sales volume, minimum output, minimum contribution or margin, minimum market share and minimum batch sizes (see Table 6.4.1). Given the normative view, any product not reaching this minimum standard should undergo thorough analysis, with a view to eliminating the product if the position cannot be rectified quickly. However, respondent companies indicated that this was not the case:

"We have a broad objective of trading at £1,000 per week, per product.... We do have some products at less than that level, but if we've got 20 products each doing £500 a week, that makes £10,000 per week overall, or half-a-million pounds a year. If we lose half a million we've got a lot of money to save or make".

Marketing Director A1

"We have a minimum market share for our major lines - but we keep it open so that we can react quickly. There's a good example of flexible circuits which we took a decision to come out of. After making that decision we reversed it. When we pulled out, four companies made

the product. We had the lowest share so we decided to abandon it. However, subsequently we combined the product with another manufacturer's component to add value to both products, and split the profit".

Sales and Marketing Director D2
(Paraphrased and Abridged)

Table 6.4.1 Minimum Standards of Performance

	Total No. Companies
Minimum Batch Sizes	3
Minimum Output	6
Minimum Sales Volume	4
Minimum Profit (Contribution) Margin	4
Minimum Market Share	<u>2</u>
	19

A total of 19 is explained by the fact that one company operated two measures of minimum standard.

Also explained in the normative literature is the difference between a minimum standard and a product goal/objective. A product's deviation from its targets might not warrant further investigation, as it can be due to temporary circumstances: out of stocks, market fluctuations, competitive activity. A minimum standard should be set at a level which reflects an excessive deviation from expectation and which cannot be altered or excused by subjective argument. This contention was not confirmed by the responses given in the study:

"Every year a sales budget is set for every product and that budget is the number one aim in sales volume goals - that is the minimum sales volume we want".

Marketing Manager C6

"Every machine we sell has a profitability analysis with it ... If we get a consistent pattern of a machine losing money and not coming near profit target then you analyse it thoroughly ... Our minimum acceptable profit is 15 per cent and we want that on everything".

Marketing Manager E2

In fact, six of the companies that claimed to have "minimum standards", did not, upon further examination, distinguish between a minimum standard of performance and a sales objective.

Three companies stipulated a minimum batch size, to help dissipate the problems associated with frequent small batch production of slow-moving items. However, in two of these cases, the rule was applied to "replacement parts" manufactured for long-life products which had been obsoleted by their customers. The decision taken by the third company (B2), a manufacturer of wood-free paper and board, is explained by a product manager:

"In order to manage our business we work on a formula testing whether a product should be in the range or not, based on our ability to make a minimum batch of the product - two tonnes. We further add that we should be able to make the product at least four times a year. Anything falling below that is guilty until proven innocent".

Product Manager B2

Given these qualifications to the objective measure of "minimum standards" it is clear that their existence will not in itself ensure objectivity. They apply in a little more than half of the sample companies where their effectiveness is far from evident.

6.4.3 Product Goals and Objectives

Twenty-five of the sample companies claimed to have product goals which were usually expressed in one of the following ways: sales volume (revenue and unit); profit margin and market share (see Table 6.4.2). In the six companies that did not set product

objectives, three concentrated on minimum standards as a "warning signal" and the other three were somewhat different. One company was small and tended not to set product objectives of any kind, sticking to overall budget figures. Most of their turnover came from servicing one very large customer. The other companies set minimum profit standards or profit objectives at the company level, which, if not attained, would trigger an analysis to find the culprit product(s). Three of these six companies did not engage in strategic planning, which might also explain their apparent lack of product goals.

The majority of companies, however, did set specific product objectives, against which the performance of a product might be measured:

"The annual budget states what we think we're going to sell in the next year and the revenue we think we'll get from those products - including sales targets in units, in revenue and we also forecast what level of profitability we'll get from it. Once we get into that year's trading, on a month-by-month basis we measure our progress against those criteria and if there's a shortfall on any one, that triggers off alarm bells to do something about it".

Product Manager C3

Table 6.4.2. Product Goals and Objectives

	<u>Industry</u>					TOTAL
	A	B	C	D	E	
Number of Companies with						
Product Objective	6	3	8	4	4	25
Sales Volume (Units or £)	5	3	6	3	3	20
Market Share	3	2	2	0	1	8
Profit (Contribution)	4	2	4	2	2	14

In many cases objectives were set, not by individual product, but rather by product group or category:

"We set targets for product types in the product departments in terms of sales, and we set a 50 per cent level of contribution for the product departments".

Sales and Marketing Manager D3

"I set goals for product groups as well as for some individual products. It would be difficult getting every product right, but we're fairly accurate with the groups".

Product Manager C2

Some companies had slightly different parameters for setting targets, including "waste limits" and "inventory holding", which help track operating problems and slow-moving items respectively. Such targets, however, were not clearly and quantitatively specified in most cases and were usually mentioned where they had become deviant or indicative of more serious problems.

While in most cases product objectives were specified and quantified, where a product was not seen to be reaching target, this was not automatically viewed as cause for concern. One reason for this is simply the time needed to trace a trend of bad performance:

"We have a budget expressed in terms of volume, margin and net profit. It's written down and compared to performance every month, for every product. We wouldn't make a decision on one or two months activity, though".

Sales and Marketing Director E5

In other instances, the cause of the product's departure from plan was known to be of a temporary nature and might be caused by any number of operational hiccups or market changes: temporary "out of stock" due to production or distribution problems, competitive promotional activity, or political events:

"Where volume targets are not being met this might be for a variety of reasons over which one has no control. For example, in exporting to the Third World you're constantly faced with political instability. That has to be allowed for and the whole forecast revised".

Marketing Director A7
(Paraphrased)

This aspect of detecting elimination candidates is re-encountered in the sub-section dealing with "review criteria", as "product goals" are a subset of all those factors that management reviews to control its entire operation.

Both these issues - minimum standards of performance and product objectives - are hailed in the marketing literature as objective measures of performance, which can help reduce subjectivity in dealing with products performing poorly. In fact, they are liable to be modified as and when management sees fit, and represent, in the final analysis, a somewhat restricted perspective of performance, related almost entirely to output and sales volume, profit margin and market share. Such checks would only result in eliminating "weak" products and perhaps this would explain the normative writers' propensity for connoting product elimination exclusively with weak products.

6.4.4 Criteria Used To Review Performance

We have dealt in some detail with the mechanisms and forums used by companies to plan and control their efforts. It is fair to say that the substance of the planning forum is the setting of minimum standards of performance, and product objectives, as well as other operational targets, such as limiting marketing expenditure, operational wastage and stock holding.

Conversely, the control forums are largely concerned with reviewing the companies performance against those objectives.

"We had a planned figure for 1984, broken down into various product groups. From our planning we know how

many alarms [alarm clocks] we want to sell. We evaluate exactly the numbers we think we'll sell in each group ... From then on we start evaluating. First we look at each model group figures. These are prepared each month showing the breakdowns: the actual sales against outlook for that month and against the year to date which we compare to the plan".

Product Manager C2

However, the review meeting does not begin and end with a comparison of actual and budget sales figures. The product manager of the company cited above explains a distinct check on performance:

"Another warning light comes from the slow-moving inventory report, done at each month end as well. This lets us see which models are building up stock - anything four months or over goes onto this form".

The point at issue here is that the review criteria identified by the respondents in the current study go beyond the parameters of "product performance", reflecting the fact that "control meetings" are more than marketing or product-related meetings. The breadth of the following fifteen criteria bears witness to the scope of managerial control activity used by the sample companies. Table 6.4.3 lists the criteria used in the sample companies.

Table 6.4.3 The Recognition (Review) Criteria in the Sample Companies

	A	B	C	D	E	
1 Past sales volume	A1 A2 A3 A4 A5 A6 A7	B1	C1 C2 C3 C4 C5 C6 C8	D1 D2 D3 D4 D5 D6 D7	E1 E2 E3 E4 E5 E6	28
2 Percentage of company sales	A2 A6 A7	B2	C1 C2 C8	D1 D7		9
3 Market share	A3 A4 A5	B1 B2 B3	C1 C2 C3 C4	D2 D5 D6 D7	E1 E3 E4 E5 E6	19
4 Market growth	A3 A4	B1 B2	C4	D2 D4	E1 E3 E6	10
5 Future sales volume	A3 A5	B2 B3	C4 C5 C6	D4 D5	E1	10
6 Profit margin/contribution	A1 A2 A4 A5 A7	B1 B3	C1 C3 C4 C5 C6 C7	D1 D2 D3 D4 D5 D6 D7	E1 E2 E3 E4 E5	25
7 Price trends	A2 A6	B3	C1	D1 D3 D7	E3	8
8 Sales vs. resources utilised	A1 A3 A4	B1		D2 D3 D7	E5	8
9 Stock levels	A1 A3 A6	B3	C1 C2 C5 C6 C7	D6	E2 E4	12
10 Service levels		B3	C6	D6		3
11 Batches		B1	C7	D2 D6	E5	5
12 Operational problems	A1 A6	B1	C3 C4 C6 C7	D2 D3 D7	E2 E4	12
13 PLC stage	A2 A5		C1 C5	D6 D7	E3	7
14 Customer acceptance	A2 A5		C4		E2 E3 E4 E5	7
15 Competitive activity	A1 A4	B2	C1 C3 C6	D1 D3 D5 D7	E1 D3 E4 E6	14

6.4.4.1 Past Sales Volume may refer to the past week, month, six-month period of year, depending on the occasion of the review. Respondents indicated that the figures may be collected via the ordering or invoicing systems which were typically computerised and that they could be broken down by product category, product range, or even individual items.

6.4.4.2 A Product's Share of the Company's Sales allows its sales performance to be comparatively reviewed. This was labelled as "company league tables" or "ranking lists":

"We do rank our products by use of the Pareto analysis and that is useful to see which products are struggling in terms of volume".

Managing Director A7

6.4.4.3 Market Share is another comparative measure of sales volume - comparing the company's unit sales or revenue with that of its competitors.

6.4.4.4 Market Growth introduces a future perspective into product and company appraisals.

6.4.4.5 Future Sales Volume also incorporates the dimension of time, helping management to extend the horizon of the immediate review, which might encourage proactive, rather than reactive decisions.

6.4.4.6 Profit Margin/Contribution refers to any number of profit ratios: return on investment, return on assets employed, marginal contribution, marketing contribution, gross and net margins. Full discussion of these is beyond the scope of this sub-section. However, the figures used were largely part of the computerised ordering and invoice systems mentioned above and were broken down in a similar fashion to sales volume figures.

6.4.4.7 Price Trends can be used to gauge a market's potential in relation to a company's capabilities. They also help monitor profit trends as an increase or decrease in price may increase or decrease profit accordingly.

6.4.4.8 Sales Versus Resources Utilised is a way of considering sales volume which allows management to assess the value of effort required to generate a specified sales figure. The Marketing Director of a large producer of confectionery explains:

"Even though some products may be earning money it's just not worth our while keeping them on - in salesmen's time ... When it becomes clear that a brand is not worth the time and effort to sell, we drop it".

Marketing Director A4

6.4.4.9 Stock Levels are used by management to indicate both sales and profit levels. The Marketing Manager of a medium-sized company manufacturing carpet explains:

"We've got to look at stock turnover in relation to profits: a range has got to move at a certain level or we get liquidity problems".

Marketing Manager C6

6.4.4.10 Service Levels or the "time required to meet demand" is another measure of the effort needed to generate a specified level of sales. The Logistics Manager of a company producing reprographic equipment and supplies explains:

"70 per cent of our products are fast-moving, can be produced and shipped in large volumes and we can therefore guarantee delivery within 24 hours. 25 per cent of our products move at an average speed and don't present major problems. But with 5 per cent of our products that move slowly, we try to manufacture in economic batches - meaning we can't always deliver quickly, as we wait for a sufficient quantity to manufacture. This means that competition can move in, in which case we lose money. But if we hold stock, we'll still lose money".

Logistics Manager B3
(Paraphrased)

6.4.4.11 Actual Versus Projected Production Loading allows managers to monitor the sizes of batches. Variances in batch sizes can often alert management to the unsatisfactory performance of a product and will also increase overall running costs.

6.4.4.12 Operational Problems such as high warranty costs or a large number of service calls can often alert managers to poor product quality. Production problems such as large variances in materials usage may be of such proportions in themselves as to warrant immediate attention and changes to the product line. The Marketing Director of a large manufacturer of paper said:

"... a basic objective is to run our machines fully and we always need to achieve an output level of so much. We have a standard for this and we know how much paper we should get off the machine, and how much raw materials we should use. We can therefore evaluate the 'actual' against the standard".

Marketing Director B1

6.4.4.13 Product's Position on Its Life Cycle Curve is used by companies to indicate both the likely growth in sales and changes in relative product quality, especially where life cycles tend to be five years or less:

"By and large, the older the range the more likely it is to decline, so one doesn't want to be sitting on a situation where they may all decline in one year".

Managing Director C1

6.4.4.14 Customer Acceptance examines, not so much the absolute quality and performance of a product (if such a thing exists), but rather the customer's opinion of the product's quality and performance. This is important as a measure of likely future sales.

6.4.4.15 Competitive Activity, when reviewed, can help position the company's efforts in the marketplace and help to gain an overall view of strengths and weaknesses.

6.4.5 Recognition Criteria - Some Observations

Traditionally, the recognition of product elimination candidates is the focus of most writers dealing with the subject of product elimination. The earliest works suggest "profit margin", "production efficiency" and "competitive activity" be primary criteria for the selection of elimination candidates (Houfek 1952, Sonneck and Hurst 1960). The first "classic" pieces written on the subject by Alexander (1964) and Kotler (1965) proposed the following recognition criteria: sales and profit trends, market share, share of company sales, total unit cost, total variable cost, executive time spent on the product. Writers advocating a product portfolio approach forwarded market share, market growth, profitability, sales growth rate, to name but a few (Drucker 1963, Henderson 1973, Wind and Clayclump 1976). Much of the normative work was highly repetitive, and the first empirical studies into the subject were entirely based on normative assumptions. Rothe (1971) and Avlonitis (1986) discuss "minimum standards", although their findings are not confirmed by the current study. However, the field is still in an exploratory stage of investigation, and future study will undoubtedly reveal what use is made of minimum standards by industrialists. Avlonitis also added the "position of the product on its life cycle curve" as a review criterion.

The present work's list of 15 recognition criteria does not claim to present "new" or hitherto "unmentioned" factors. Rather, it serves as evidence of the wide-ranging issues managers use to track the performance of their products.

These 15 review criteria represent a comprehensive structure for management to follow. In the sample companies, the average number of criteria reviewed regularly was five. This is not surprising when one considers that several criteria measure a similar dimension, in a more or less sophisticated way. For example, criteria 1, 2 and 5 are related to sales volume each giving a slightly different slant: comparative, future, historical.

Criteria 6 to 11 are related to profit, the amount of money left after all expenses have been accounted for. Criteria 12 to 15 relate to the quality and marketability of the company's products.

However, such a grouping is highly arbitrary. All the criteria serve to keep a check on the health of a product. In some instances, a review criterion is a measure of more than one dimension of marketing strength. The position on the life cycle curve can be indicative of quality, future sales volume and customer acceptance. Stock levels relate also to sales volume, marginal contribution and actual versus projected production loading.

In the preceding section which presented and discussed the "precipitating circumstances" it was argued that, for a number of reasons, Table 6.3.1 could not be believed as a reliable "frequency table" of reasons a product might be dropped. However, in the case of review criteria, reasonably fresh in the minds of the respondents, there is more justification for inferring that "past sales volume" (used by 28 companies), "profit margin" (used by 25 companies), and "market share" (used by 19 companies) are indeed the most popular criteria for reviewing. However, the emphasis apportioned among criteria varied considerably. For example, the Commercial Director of a large company producing dairy foods said:

"We look once every period, which is about once every four to five weeks, at our major lines and by and large we look at volume sales. On a less frequent basis we look at profitability".

Commercial Director A5

Similarly, the Marketing Director of a large company manufacturing conversions of paper and board stated:

"We can't quantify volume in terms of 25 percent of the market or four percent growth. We can't work in that way - we can't be flexible because the price is fixed worldwide for our supplies and our products. We do monitor our share very closely monthly, so that we can see trends, up or down".

Marketing Director B1

These three criteria were reviewed during planning and control meetings of various intervals. A "monthly" marketing group meeting, for example, might well meet monthly to discuss performance against the sales budget, yet review market share every second month only. At most, the companies used a checklist or "hit list". Such lists were usually in the form of computer printouts and checking involved identifying wayward figures:

"We've got a newer breakdown by UK, EEC, US, which allows us to compare the plan against our five-month outlook. We go down the columns and look for the minuses!"

Product Manager C2

In most cases, management considered an unwritten set of criteria, although some went on to commit worrying aspects of performance to paper, as with the previously cited slow-moving inventory report used in Company C2. A similar situation exists in Company D2.

"Any time we change our business plan (and that includes dropping a product) we have to submit this in writing to the parent company saying 'this is the change', explaining why and so on, so that they, our bankers, and we, know what we're doing".

Sales and Marketing Director D2

On the whole, companies did not express the need for written procedures and respondents generally felt that spotting candidates for elimination was not a difficult task:

"We don't have a written sheet saying that when a product gets to a certain level then there is a warning signal and you have to look at it carefully. We don't need it. Our brand management system looks at every product in terms of sales every week, in terms of profit every month - in operational terms daily because the brand group is involved with its products day-to-day".

Marketing Director A4

"Where it's a question of getting rid of a product because it's performing badly, we have so many checks on our performance that we don't need a special application to the problem".

Product Manager C3

"I would suggest that our existing structures are adequate for tracking performance. Our management team is young and younger managers are more critical of themselves and others".

Sales & Marketing Director E5

"I think there is a requirement in a larger organisation to have a formalised structure for product elimination. At present we have a young, dynamic team here till 7 or 8 at night making decisions. There are some written items - all changes [to products] have to be written down".

Marketing Manager C5

Review criteria are limited in the amount of information they convey to management. They allow weaknesses to be detected but, by their very nature, do not provide adequate information to proceed with a decision, often leading to a situation where nothing is done at all. This can be, in certain instances, well justified:

"ROAE is our major gauge of performance. But if something was going wrong - because of a strike or if we were introducing new manufacturing technology - that would also show up on the figures. As long as we are aware why it's going wrong it doesn't really matter. It's when there's an underlying trend of things going wrong that you've got to be wary".

Marketing Director D3

"Our warning signals include margins, sales volume and market share... But despite these warning signals, if we think a product has potential, we'll not take it any further".

Marketing Director C4

"The first place for a problem to be picked up would be at the management review of financial data. That wouldn't be a major decision trigger, we'd want to take a strategic decision. If sales or market share went down sharply, then, although it's against what the textbooks tell you, we'd look at the operating reasons first".

Marketing Director D2

However, there is always the danger that in waiting for a trend to develop, considerable harm is done to the company's trading potential.

6.4.6 The Effect of Strategic Planning on Review Criteria

As we have argued, review criteria represent a selection of ways to compare actual and planned performance. These review criteria must therefore be related to performance goals, themselves derived from overall goals. It is not outlandish, then, to expect review criteria to vary according to the strategic orientation of the company. Indeed, one of the major aims of this current study was to examine the way in which strategic planning issues affect, if at all, the criteria used to review product performance. The raw data underlying Tables 6.1.3 and 6.4.3 were compared (in a similar fashion to Tables 6.1.3 and 6.3.1 in the preceding section), to attempt to discern any extant patterns. No general pattern was evident. This can be explained by two factors. Firstly, as we have previously stated, the three "strategic orientations" are not mutually exclusive. While some indications exist that a company emphasises one orientation, this does not mean that the same company does not include in its strategic planning one of the issues associated with a different orientation. Clearly, quantitative data is more useful here. Secondly, the average number of recognition criteria used by sample companies was five, ranging from two to eight. With a sample size of 31, and 10 strategic issues to contend with, this thwarts the tracing of patterns even further since, in contrast to the precipitating circumstances, a wide range of criteria is used by most companies.

While this issue will be analysed further at the mail survey stage of the study, it is nonetheless interesting to relate some anecdotal examples which can indicate the potential influence of strategic issues on review criteria.

Company B1, a large manufacturer of paper and board tends to be highly motivated by finance-related strategic objectives. This translates into rigorous control of costs and prices, particular attention being paid to production batch sizes and the review of sales as against the resources utilised.

In Company C7, a large manufacturer of carpets, the importance is given to finance-related strategic issues. In reviewing products, they are concerned with batch sizes and operational problems in producing and marketing their products. Of great concern is the fact that, ironically, some of their best-selling products are notoriously difficult to produce.

Company B2 is primarily concerned with the issue of strategic growth and managers are anxious to ensure that the company's products are contributing to overall growth objectives. Consequently, they review with particular care market growth rate, market share and a product's percentage of total company sales volume.

Company C1 stresses growth issues in its strategic planning, and as explained earlier, the existence of many ageing products works against the achievement of growth objectives. In this company's review procedure, the stage of each product in its life cycle is carefully monitored.

While these examples cannot be used to suggest definitive associations between strategic orientation and review criteria, the fact that certain review criteria are more important in certain strategic environments is logically attractive and worthy of further investigation.

6.4.7 The Interaction between Review Criteria and Precipitating Circumstances

The origin of the product elimination decision in the company is a function of two sets of variables: precipitating circumstances and review criteria. The origin of the decision is therefore the identification of a product elimination candidate. At the outset of this section, it was argued that an elimination candidate might be identified in one of four situations: a) when a crisis arises; b) when a product becomes ill-suited to strategic objectives; c) when an opportunity is spotted for enhancing company performance; d) when a product's performance falls below an acceptable level. Each of these situations, which represents a number of precipitating circumstances, is recognised by different factors, or review criteria. This sub-section explores the relationships between precipitating circumstances and review criteria suggested by the interview data.

However, since the sample companies appeared to use a wide range of recognition criteria, it was decided to examine the interaction between them and the precipitating circumstances, by focussing on the elimination case histories. It also seems more methodical to examine the various factors specific to a particular decision than to draw inferences from two "sets" of generalised data, the general precipitating circumstances and the general recognition criteria. Results of this analysis are shown in Table 6.4.4.

Three "precipitating circumstances" appeared to be particularly associated with certain recognition criteria. They are "new product development", "poor product quality" and "resources required elsewhere". The tentative nature of these suggestions

should be stressed for two reasons. The first is the problem common to all qualitative work: interviewer bias during the interview and in interpretation of the data. The second is that since nearly all the companies reviewed past sales and profit margins, then it is difficult to draw conclusions from the two most important review criteria.

New Product Development

Of the 50 case histories of elimination decisions, five were dropped due to the development of a new product. (These, of course, do not include the cases where a new product was introduced specifically because of some other problem with the existing product). Although these case histories were related by respondents in companies with "on-going product replacement policies", a number of recognition criteria are evident in more than one instance. "Future sales volume" was said to have been relevant in three of the five cases, as was "the product's position on its life cycle curve". These review criteria are examples of the "classic" approach to new product development where the demise of the old product is foreseen and planned for before problems begin. In addition, both "competitive activities" and "share of company sales" were relevant in two out of the five cases in this category, as indicators to management that the development of a new product, to replace the old one, should be initiated. At this juncture, it is apt to mention another precipitating circumstance - namely "competitive activity" itself. In all four cases where a product was dropped due to competitive activities, a new product was developed in its place. Had these deletions been included in the "new product development" category (as it was really a question of timing that precluded this), then the suggested relationship between "new product development" and the monitoring of competitive activity would be yet more visible.

Table 6.4.4 The Precipitating Circumstances and Recognition
Criteria of the Case Histories

Precipitating circumstances (and companies assigning a specific deletion to them)	Review Criteria
<u>New product development</u>	
A2	<u>Product's position PLC curve</u>
A5	<u>Future sales volume</u>
	<u>Customer acceptance</u>
B2	<u>Market Share</u>
	<u>Future sales volume</u>
	<u>Competitive activity</u>
	<u>Products' share of company sales</u>
C5	<u>Future sales volume</u>
	<u>Product's position on PLC curve</u>
D7	<u>Products' share of company sales</u>
	<u>Product's position on PLC curve</u>
	<u>Competitive activity</u>
<u>Poor product quality</u>	
C4	<u>Operational problems</u>
	<u>Customer acceptance</u>
	<u>Market share</u>
D7	<u>Sales vs resources utilised</u>
	<u>Product's position on PLC curve</u>
	<u>Operational problems</u>
E2	<u>Operational problems</u>
	<u>Customer Acceptance</u>
E3	<u>Market share</u>
	<u>Past sales volume</u>
	<u>Profit contribution</u>
E4 (unsuccessful new product)	<u>Operational problems</u>
	<u>Customer acceptance</u>

Poor Product Quality

Four of the specific deletions were caused due to poor product quality. In three of these cases, management was alerted to the problem through experiencing high service and high warranty costs (operational problems). Logically enough, where a product is of inferior quality it is more likely to break down, which can be traced by the number of service calls and free parts fitted. In addition, one of the "unsuccessful new products" was also dropped due to inferior quality. It too was recognised primarily through service calls and warranty claims. A second recognition criterion "customer acceptance", was instanced as relevant to the deletion of failing product quality in three of these cases.

Company Resources Required Elsewhere

Although only one specific deletion was described that had been instigated to free resources for other opportunities, it is salient to note that the overriding recognition factor was "sales versus resources utilised". However, before any definite inferences may be drawn, it is necessary to investigate more deletions of this nature.

6.4.8 Summary

This section has presented findings relating to how the sample companies monitor performance and recognise an elimination candidate. The use of minimum standards, product objectives and review criteria were investigated as means of detecting a product which ought to be eliminated.

While the data show that in 18 companies minimum standards are set, a third of them did not distinguish between minimum standards and product goals. 25 (81 per cent) of the companies set goals or objectives for their products and 15 review criteria were described by the respondents, with an average of 5 being used in each company.

From the product case histories, some conceptual associations have been made between the review criteria and the strategic issues. At this stage however, such an association is rather tenuous.

A number of more obvious associations have been identified between the precipitating circumstances and review criteria, although they remain at the exploratory level at this stage in the research.

Section 6.5 The Analysis and Revitalisation of Product Elimination Candidates

6.5.1 Introduction

The preceding sections have dealt with the conditions and circumstances that predispose companies to consider the elimination of a product. Having examined the strategic goals which might engender various precipitating circumstances, and having related these to the mechanisms and issues which bring an elimination candidate to light, it is now time to describe the way in which elimination candidates are dealt with in the respondent companies. With reference to our conceptual framework, it can be seen that once a product is recognised as a candidate for elimination, the next step is to analyse further, with a view to improving the situation. This section deals with how companies carry out such analyses, which methods of revitalisation are pursued and attempts to identify which factors govern this routine.

6.5.2 The Diagnostic Routine

The very title of this routine implies that something is wrong. A "problem" has to exist before it can be diagnosed. It follows then, given the extensive list of circumstances that may cause a product to be dropped, that not all elimination candidates have to be diagnosed, since not all are "problem" products. For example, where a product is dropped to free resources for other opportunities, it is unlikely that the management of a company will spend time diagnosing the problem. A small manufacturer of fresh and frozen foods (Company A1) replaced a traditional product with a modern one to free the disproportionate space used by the traditional product. The analysis undertaken centered on the likely reaction of the grocery trade, rather than on why the situation came about in the first place. Such an analysis falls into the "evaluation" stage to be dealt with in the next section. Similarly, when a new product is developed to replace an existing one, little time is wasted on how competitive the old product is, and energies are transferred to executing a well-planned and smooth

changeover. It should therefore be remembered that this stage of the product elimination process is almost exclusively reserved for products that are performing poorly. Consequently, the form the analysis takes is largely dependent on what is initially perceived to be "wrong" with the product. Table 6.5.1 lists the analysis issues.

Table 6.5.1 Analysis Issues in the Sample Companies

1	Cost of ingredients/parts	B1 A2 A5 E2 E3 C3 A6 D5 E1	9
2	Efficiency of manufacturing lines	E3 B1 A2 C3 D5 D1 D6 C2	8
3	Materials usage variance	A4 E3 B1 C3 D5 E1 E2	7
4	Raw material stock levels	B1 C2 D5 E5	4
5	Sales force activity	C5 C7 C3 A1	4
6	Availability of product	A7 C2	2
7	Regional sales analysis	C4 A1 C7 E2 E6	5
8	Sales mix	C3	1
9	Lost order analysis	E3 D7 D1 D2 D3 E4 E5	7
10	Level of trade support	A7 C6 C3 C5 A1 A5 C1 D4	8
11	Market dynamics trends	E3 B1 C6 A4 C1 D3 E4	7
12	Competitive activity	C6 A7 C3 A5 A4 D4 D5 D1 D6 E1 D2 D3 E5	13
13	Customer acceptance	E3 E2 A4 B3 B1 C6 E4 A5 C8 C2 C3 C5 A3 C4 C1	15
14	Position on the PLC	C6 D7 E6	3
15	Test market approach	A3 A4 A6 C8	4
16	Price	A1 A6 C1 D5 D2 D3 E4 A2 B1 A7 A4	11

6.5.3 Issues in Analysis

6.5.3.1 When Profits Shrink...

When profits fall, attention is turned to either or both sides of the profit equation: costs incurred and prices charged. The interview respondents indicated several cost-related issues which frequently require inspection. The first of these is the cost of ingredients or parts which can fluctuate due to increased supplier charges, changes in the exchange rates or short supply of raw materials:

"We discuss the problem and, mainly, we look at variances. Is the cost of the bought-out items increasing? In production is the product taking longer to produce than expected?"

Marketing Director El

A second cost-related issue, alluded to in the above quotation, is the efficiency of manufacturing lines. This issue goes beyond the question of batch sizes, embracing important issues such as breakdowns, stoppages or the manufacturing process itself. Fluctuations in these areas add to costs, insidiously eating away at profit margins.

On occasion the reasons may not require specific diagnostic attention, as in the case of a customer going into liquidation:

"Once a product is no longer achieving target, if the reason is not immediately apparent, for example a customer is going out of business, or a strike or something obvious, then we'd have to do a lost order analysis".

Sales and Marketing Director D2

A further cost-related issue which might explain a fall in profits is a variance in materials usage. The cost of a product is usually pre-set on the basis of a standard mix of parts or ingredients. Should practice deviate from this standard, then profits will deviate accordingly:

"Our factories have basic standard costs which are set in the budget to which they've got to stick: any deviation or variance is reported, be it plus or minus".

Marketing Director A4

High raw material or parts stock may also account for diminishing profits and can be investigated when a dip in profits is detected.

These four cost-based areas for investigation tend not to be examined singly; rather two or more might be taken as an indication of overall cost trends:

"When profits fall we look at each single component of costs. Are more raw materials being used than should be? If so, is wastage occurring during or after the process? Are we producing as much on that machine as we should be? All elements of cost are scrutinised".

Marketing Director B1

Side two of the profit equation - price - is also subject to investigation. A major concern of the respondent companies was the extent to which profits might be restored by price increases without being harmful to volume:

"Gross margin, of course, is only a factor of two things: the cost of making it [the product] and the price you can sell it at, and sometimes it is not possible to sell it at a high enough level - that needs to be known - it could be because of competition, or whatever".

Marketing Director A2

A final area of analysis relevant to a decline in profits is the mix of sales across the product range. The profit margin for a product is often set in relation to its expected sales volume and the expected sales volume and profits of other products in the company's range (eg. loss leader). Should the balance of sales alter, then profit may alter accordingly. A decline in overall profitability can be traced to a change in the mix of products sold.

6.5.3.2 When Sales Volume Falls...

Where a drop in sales is giving cause for concern, the respondent companies are faced with a multitude of possible explanations which could be explored.

Firstly, sales force activity is sometimes examined, on two counts. The actual performance of a salesman might reveal a disenchantment interfering with sales performance, or the performance of the sales force as a whole might reveal underlying problems regarding the product they are trying to sell.

"We look to see if there is something our salespeople don't understand about the product, with a view to carrying out some extra promotion and sales training".

Product Manager C3

The availability of the product to the customer needs to be checked to ensure that a dip in sales volume is not merely the result of "out of stocks". Stock has to be checked throughout the chain of distribution.

"Well, if sales drop one month, you've got to make sure it's not because of 'out of stocks'. 'Was the product available?' is your first question".

Product Manager C2

If a drop in sales has been detected, a further way to pinpoint the cause is to carry out a regional analysis. Such a procedure, comparing sales in various regions served by the company, enables management to locate the root of the problem. The Marketing Director of a large company manufacturing domestic gas heaters explained:

"There's often a regional variation, so we investigate sales and marketing problems in each of the 12 regions. First it's where, then why, and if we can do anything about it at a reasonable cost, we will".

Marketing Director C4

A fourth issue taken into consideration following a decline in sales volume is the age of the product, or its position on the product life cycle curve. This issue was most relevant to companies where products experienced short life cycles, either due to changing fashions or speedy rates of technological innovation. The relative age of the product was mainly used to indicate the corrective possibilities open to the company.

The fifth type of analysis appears to be exclusive to the industrial field: lost order analysis. This analysis attempts to diagnose why a specific order or contract has not been won, by systematically examining a number of key factors. Depending on the company and the nature of its operations, such factors include customer expectations, standards and specifications, the company's approach to the customer, the competition in general, their product services and prices, the company that did win the order and its competitive advantage:

"With our existing products, we're more or less successful, usually by our sales and marketing approach, than by the product itself. The first check is who else is getting the business, why, with what type of product and what is our nearest equivalent? How do we compare technically, what's their salesman like compared to ours, do they have any relationship with the customer?"

Chief Executive E3

"We'd look at which orders were going and why we didn't get them - was it on price? It's not usually on quality. We'd look at their products and compare all aspects of these, including their salesman, who might have a long-standing relationship with them".

Sales and Marketing Director D2

Such an approach is most appropriate when dealing with one or two big orders or contracts for a small number of large prospective customers. However, in the consumer field there is an equivalent

all-round analysis to investigate a drop in sales: the test market approach. This diagnosis involves adjusting elements of the marketing mix to isolate those elements which appear to influence shelf off-take:

"When we have a problem we can't get to the bottom of, we use a 'greenhouse'. We isolate one test environment and test alternative marketing approaches. We repeat the successful ones nationwide".

General Manager A3

A number of analysis issues concentrate fully on the less controllable forces at play in the distributive chain and in the marketplace.

For example, investigating current competitive activity can reveal a source of sales loss. Again competitive activity need not be formally addressed in an investigation, as a competitive promotion or new product would not normally be detected after a decline in sales, but before.

The level of distributive trade support is important to companies who rely on middlemen to sell the product to the end user. It is especially important to consumer goods companies, where distributive pricing has to be checked along with the amount of shelf or floor space given to a product:

"We look at pricing policy against output, competitive activity and all the classic marketing checklist factors. Our major listings and/or delistings are vital and we try to analyse why we're getting worse distribution - through which customer and why".

Commercial Director A5

"We've recently been discounting a high-quality product which has only been partially successful. We've lowered the price by about £4 per square metre, and although we can't enforce that the retailer passes it on, most do, but we have to check it out".

Marketing Manager C6

An analysis of market dynamics and trends often shows up structural reasons for a product's poor performance. This analysis was undertaken by companies where some suspicion existed that declining sales volume was the result of more than purely whimsical changes in the market:

"You analyse the market requirement to establish why your product offering is right. For example, we had a product which had low sales, and which was geared at two market segments. In fact, it had good sales in one segment and so it was geared, in part, to the wrong segment. We looked very closely before seeing that was the case".

Marketing Director E4

"We used to manufacture waxed paper for bread. That began to decline because the bread manufacturers were changing to plastic bags, and every time a new machine was bought, it was for plastic bags, not waxed paper. In that instance the trend was important".

Marketing Director B1

Examining market or customer acceptance of a product attempts to isolate those features of the product which prevent a customer or market segment from buying the product. The features chosen for examination will vary from industry to industry, from company to company:

"Well, if we do have stock of a particular product, we ask ourselves why it didn't sell, in which case we look at aspects of the product, like price, colour and style to see if they are acceptable to our customers".

Product Manager C2

"When we have a sales problem we'd generally look at the customer, his uses of the product, our prices, basic cost structure, the whole quality angle. It's very much a circular thing and you have to break into the circle somewhere".

Marketing Director B1

6.5.4 The Diagnostic Routine - Some Observations

Only very few writers contributing to the general subject area of product elimination have given any thought to how an elimination candidate might be analysed. Sonneck and Hurst (1960) and Browne and Kemp (1976) deal with analysis, advocating a variety of issues which might be helpful in locating the cause of a product's deviance. They suggest among others "value analysis", "price/product acceptability", "competitive activity", "economic trends", "complementary services", as areas to look to in explaining poor product performance. Other writers, again, concentrate on analysing the pros and cons of putting what is wrong right. Kotler (1965) mentions "modification potential", "marketing adjustments potential" as issues which need to be analysed before deciding on a course of action.

Articles based on empirical studies have not ignored the "analysis stage" to the same extent as their normative counterparts. Rothe (1971) reports "market position", "current investment" and "product costs" to be of importance in the companies he surveyed, while Evans' (1977) findings include "competitive retail value", "product styles", "warranties" and "variety".

The more recent work of Avlonitis (1985) isolated seven analysis issues: production methods, competitive activities, product's cost structure, product's design, customer requirements, product's market price and product's market share. The study in hand presents a list of "analysis issues" as used in 31 companies in 5 industry sectors. Clearly, the consumer goods companies (both fast-moving and durables) bring a distinctive view to the analysis of elimination candidates, with such issues as "test market" and the "level of trade support". In addition, where Avlonitis (1985) mentions "production methods", the current work attempts to preserve the raw data by breaking this into the issues actually cited by the respondents: "efficiency of manufacturing lines" and "materials usage variance".

The previous paragraph overviews the issues used by management to determine the source of a product's poor performance. Evidence from the interviews indicated that a variety of inter-related causes usually explained poor sales and profits, and thus was reflected in the typical diagnostic routine which scrutinised more than one issue:

"If we suddenly find sales decreasing we ask - has a competitor come in with a better machine? Have we not been promoting? Is there something that sales and dealers don't understand about it? Is it a combination of these things? Once you know why, you can do something about it and retrieve the situation. The same happens if we're not making a profit - are we getting the price? Has the sales emphasis over the range shifted, from the top end of the range which is more profitable, to the bottom which is less so?"

Product Manager C3

As was previously mentioned, the diagnosis need not always be formally initiated. This might be because the root of the problem is obvious without looking any further, or because management perceives the problem to be short-term.

"Where there is a shortfall in volume in the short term, say, one year, it may be for a variety of reasons over which one has no control. That has to be allowed for".

Marketing Director A7

In a similar vein, a problem perceived to be ephemeral may only receive cursory managerial attention.

"A price promotion would feed through automatically - although competitive activity wouldn't only affect one carpet. If they were doing something on patterned ranges, then our patterns might be affected over a number of price points, and, in the short term, with a limited number of retailers we are most unlikely to find ourselves influenced by that kind of activity".

Managing Director C7

Depending on these initial managerial perceptions regarding the nature of the problem, the diagnosis routine will vary in depth. A short-term problem is often borne, while a longer-term one causes the setting up of a project team, to find a long-term solution.

6.5.5. The Effect of Precipitating Circumstances on the Analysis

One of the major drives in the present work is to discover how, if at all, the circumstances in which a product finds itself influence the way in which the elimination process proceeds. More specifically, the circumstances which lead managers to single out a product as an elimination candidate were suspected to be of great importance to the analysis stage.

It was decided to investigate the existence of relationships between the precipitating circumstances and analysis issues by examining the 50 elimination case histories. To attempt to compare the two from the testimonies of respondents speaking generally, first about one and then about the other, was felt to be far less logical and rigorous than a direct comparison of the precipitating circumstances and analyses issues surrounding one product.

This does not, however, allow us to abandon caution regarding the following tentative associations. They are based on subjective accounts of a relatively small number of decisions, and undoubtedly suffer from being incomplete descriptions of all that took place. Table 6.5.2 summarises the results of this analysis.

6.5.5.1 Rationalisation

Four products were deleted due to a policy of rationalisation. In none of these cases was there any analysis at all. Although the kinds of rationalisation policy differed, once agreed upon, and elimination candidates selected, there is very little to analyse apart from "when" and "how" to drop. This helps explain our introductory note, which suggests that the analysis stage is perhaps only relevant for products performing poorly.

Table 6.5.2 The Precipitating Circumstances and Analysis
Issues of the Case Histories

Precipitating circumstances
(and companies assigning a
specific deletion to them)

Analysis Issues

Rationalisation

B3	No analysis carried out
B3	No analysis carried out
C6	No analysis carried out
D6	No analysis carried out

Poor product quality

C4	Customer acceptance
D7	No analysis carried out
E2	Customer acceptance
E3	Customer acceptance

Poor sales only

A1	Regional sales analysis
	Level of trade support
	Sales force activity
	<u>Price</u>
A4	<u>Customer acceptance</u>
	<u>Price</u>
A4	Competitive activity
A5	<u>Customer acceptance</u>
A7	<u>Customer acceptance</u>
C1	<u>Price</u>
C1	No analysis carried out
C2	No analysis carried out
C6	<u>Customer acceptance</u>
D5	<u>Price</u>
	Cost of ingredients/parts
	Materials usage variance

Unsuccessful new product

A1	<u>Level of trade support</u>
A3	<u>Customer acceptance</u>
	Test market approach
A6	No analysis carried out
C2	<u>Customer acceptance</u>
C3	<u>Customer acceptance</u>
	<u>Level of trade support</u>
C5	<u>Sales force activity</u>
	<u>Level of trade support</u>
	<u>Customer acceptance</u>
C8	<u>Test market approach</u>
	<u>Customer acceptance</u>
E4	<u>Customer acceptance</u>

6.5.5.2 Poor Product Quality

Another four of the fifty case histories were products dropped due to poor quality. In three of these cases, a primary issue to be analysed was "customer acceptance" of the product, to find out what their quality requirements were. In two cases, the desired quality could be achieved, in the other two cases the offending product was dropped without being replaced.

6.5.5.3 Poor Sales

The ten case histories of products dropped due to poor sales were usually thoroughly analysed. The most common analysis issues were "customer acceptance" (four cases) and "price" (four cases).

6.5.5.4 Unsuccessful New Product

Eight case histories were, in fact, unsuccessful new products. Generally, they tended to cause long, involved analyses, which is logical, given the investment they accounted for. These eight cases also produced a variety of issues for analysis. Retail or trade support was relevant in three instances, while in the consumer durables in this category, "customer acceptance" was once again analysed in five cases, although it is difficult to draw any firm conclusions, since this issue was the most frequently-cited of all.

The diagnostic routine is undertaken to furnish organisational decision makers with the information necessary to choose an appropriate course of action. Depending on the outcome of the diagnosis, managers choose one of three options - do nothing; correct the fault; drop the product. Already mentioned are the kinds of situations where nothing is done. Attention is now turned to the ways in which managers seek to correct the fault.

Once the cause of a product's deviance is identified, management is in a better position to see which, if any, corrective actions may

be taken to revitalise the ailing product. Should management decide to revitalise, the method employed bears a direct relation to the diagnosed cause of the product's malady. Evidence from the interviews tends to suggest that where a product has become an elimination candidate because of external forces (government policy, parent company decisions), or an active variety reduction policy, or because resources are required for other endeavours, little is done to revitalise product performance. Company B3, manufacturing drawing office equipment and supplies, was instructed by its parent group to drop a product which was deemed incompatible with company policy. On receiving instructions, the management in Britain attended to matters of stock and to informing customers before phasing out the product. Taking the example cited in paragraph 6.5.2, Company A1 had not carried out a diagnostic routine and did not try to revitalise the product which they were dropping to make room for alternative developments. Where products are being rationalised or reduced in variety, there is little evidence of any corrective action being initiated, as the object of the exercise is to reduce the amount of duplication and proliferation of products, not to restore them to previous levels of success.

6.5.6 Revitalisation of Elimination Candidates

Eighteen methods of revitalising products were described by respondents. Table 6.5.3 summarises them.

6.5.6.1 Decrease Price

Where companies were interested in carrying out some form of revitalisation, a number of alternatives were forwarded; from Table 6.5.3, it can be seen that the most frequently-cited response to ailing product performance is to decrease price. As in previous sections, however, it is unwise to infer that this is the "most popular" method of revitalising products. This phase of the decision-making process was almost directly dependent upon the specific circumstances of the product under consideration. This tactic was adopted in all industry categories, either to meet a competitive price promotion or to attempt to resuscitate sales in

Table 6.5.3 Methods of Revitalising Products In the Sample Companies

		TOTAL
Quality improvements	B3 A2 A1 D1 C4 E3	6
Cost reduction	B1 C7 D5 D1 E1 D2 D3 E3 A1 A5	10
Product modification	A2 C3 C1 C8 D1 E2 E6 E4 E3	8
Packaging changes	A7 A2 A1 A3 A6 A5	6
Price increases	B1 D3 E3 A2 A4 C2	6
Price decreases	B1 C6 C4 C3 C5 C7 C1 C2 D4 D6 E1 E2 E6 D3 E4 A5 A2 A1 A3 A6 A4	21
Production improvements	B1 D2 D3 A4	4
Increasing sales force effort	C4 C3 C7 C2 D7 E1 E2 E6 A6 A4 A5 C1	12
Increasing print - media advertising	A7 D4 E6 D3 A2 A3 A5 A4 C5	9
Extending warranty	C4 E2	2
Increasing sales promotion	C6 C4 C5 D6 E1 E5 A3	7
Market concentration	B1 B3 C4 C8 A4	5
Development of new markets	C8 D4 D2 D3 A6 E1	6
Product range extension	A2 A5 D6	
Improving distribution	C3 C5 D4 A6 A5 A1	6
Change distribution	A7 D4 D6	3
Source or factor	B3 D2	2
Product range reduction	B3 A4 D6	3

the longer term. However, no company claimed to reduce price, if the product in question became, as a result, loss-making.

Decreasing the price of a product is also used to run down finished stocks of a product which is being replaced by a new one. Some quotations illustrate managers' opinions about decreasing price as a method of revitalisation:

"If the competition lower prices, we might not be able to match them. We'd know about it - but we might just have to drop out if prices get too low".

Marketing Director B1

"With short life cycles in the high technology business we keep margins high so that we can decrease the price if need be".

Managing Director D4

"When a product is declining, provided you've got something to take its place, the tendency is to drop the price. It depends. A product declining in sales might not mean declining opportunities. It may be you're not competitive enough - you can then promote it in job lots to areas outside your normal operating territory. All these are ways of getting more sales from that product, when what is needed is a new product altogether".

Sales and Marketing Director D4

"Even our biggest brand can decline in the short term and corrective action will depend on the situation. We had a shaky situation last year on 'Chocobar*' when sales declined because it was more expensive than its major competitor 'Toffobar'*. We stuck it for a time and stopped price rises accordingly - it's usually that".

Marketing Director A4

* fake names to conceal company identity.

A number of respondents were reluctant to use price as a tool for avoiding low sales, for a number of reasons. First, price cuts lower profits and can encourage the competition to follow suit, leaving lowered profits without a competitive advantage. Second, cutting price on some of the company's brands can stimulate "cannibalisation". In some situations, price cuts don't actually increase sales of a product, they merely change the date of purchase. Cuts can also undermine the confidence of the distribution:

"With price cuts you've got to be sure you're not jeopardising the sales of your most profitable lines".

Product Manager C2

"We don't think price cutting is a good idea. The carpet industry is bad for that, discounting has done a lot of harm and we don't try to meet it".

Managing Director C7

6.5.6.2 Cost Reduction

Price decreases mean that the company accepts lower margins. However, this is not suitable in all circumstances. Another popular method of revitalisation in respondent companies was a cost reduction which could be undertaken, either to prepare for a price cut without a loss in profits or to increase the profit margin on a product. A cost reduction was achieved in a number of ways: altering the mix of parts or ingredients in the product, altering the source or quality of parts or ingredients, reducing the numbers of parts or components, reinvesting in more productive plant or withdrawing promotional support:

"Two years ago we bought concentrate from Brazil, we had decided how much to put in to deliver an acceptable quality fruit juice. We thought our product was too good, so we put a little less concentrate in - and you don't have to change the percentage very much - added more water and massively improved that margin, without any real detrimental affect on the quality of the product".

Commercial Director A5

"Corrective action usually boils down to either having to reduce the quality and therefore price, or to reinvest to reduce the price".

Sales and Marketing Director D2

"We have to ask ourselves - how can we change that paper formulation, can we get cheaper grades, a cheaper raw material base, can we reduce a certain chemical?"

Marketing Director B1

6.5.6.3 Product Modification

Rather than a short-term approach, some companies, where appropriate, might try product modification as a way of altering the sales or profit trends of a particular product. This differs from "cost reduction" in that it represents an attempt to add value or variety to the product, which although it can result in a lower price, is not done specifically to achieve a lower price:

"Modification is a very, very important area, more so due to high costs in new product development and dropping products".

Marketing Manager A2

"We market five washing machines with different colours of bezels and trims - red, yellow, blue, green and lilac, since our colour consultants thought this would set it off as a classy, top-line product. However, sales of the lilac trim were disappointing, and we found from dealers and store girls that lilac wasn't liked by the customers, so we changed it quickly and easily to something more acceptable".

Product Manager C3

"Generally speaking you can update machines easier and cheaper than you can introduce new ones, so if you can build new features into the old product, it is generally a better proposition for the company".

Marketing Director E2

6.5.6.4 Packaging Changes

Not unrelated to "product modification" are packaging changes which can be used either to reduce the cost, without actually impinging on product quality, or to alter the image of the product in the mind of the customer, or to differentiate it from competitive products. In the words of the general manager of a large company manufacturing dried food and instant beverages (A3): "packaging is a very important area of innovation". A similar opinion is expressed below:

"We are taking a very serious look at packaging, as one can effect a lot of savings in packaging terms. The quality and type of containers you put the glass into, the type and quality of printing ... we have to look at the market, and act accordingly".

Marketing Manager A7

Obviously the more packaging used to market a product, the greater the options are, and generally this option was confined to consumer goods companies.

6.5.6.5 Quality Improvements

A branch of "product modification" important enough to warrant separate treatment is quality improvements, which were usually considered where quality was known to be inferior and unsatisfactory. Frequently, where product quality could not be improved the product was phased out:

"If the competition had something far better than us we'll say 'do we want to stay in that market - and if so we'll have to redesign the product to a higher standard - or do we want to just phase it out'".

Chief Executive E3

"If the demand is there but the quality is weak we will stop it right away because of the interest we have in maintaining our name for quality. We will see if we can overcome the weakness, but until we can, we won't sell the product".

Marketing Director D1

6.5.6.6 Extension of Warranties and Guarantees

An alternative way of enhancing product quality reported by the respondent companies was the extension of warranties and guarantees:

"If you've got technical problems you'll extend the warranty and say 'look - from 6 - 12 months parts and labour free' and so on".

Marketing Director E2

Two further product-related options for revitalising products are product range extension and product range reduction.

6.5.6.7 Product Range Extension and Product Range Reduction

The former option allows the company to compete with a wider choice of products for potential customers, with little physical or functional difference among the products: an altered feature or form perhaps, or trimming, or slightly cheaper version. While this response was not necessarily specific to a particular problem product, for companies using it, it might help rekindle interest in the range generally:

"Apple pies are in three different forms, and there's always the possibility of bringing out apple pie in another form - a flan or whatever".

Marketing Director A2

Product range reduction was seen to help the problems of managing extended product ranges, eliminating the disproportionately high costs of manufacturing and stocking slow-moving items. Where customers could be persuaded to purchase alternative items from the range, batches of such items could also be produced, reducing unit costs further:

"We have been looking at our B list* of parts. In certain circumstances there are shock-absorbers which we have in two to three varieties, which is more than we should have. We've been doing a lot of relabelling, by taking three to four

* (slow-moving list)

products for one group of motor cars and selling them now as one part, because the only difference was in the setting, which is imperceptible in an older car anyway".

Product Planning Director D6

6.5.6.8 Production Efficiency Improvements

In a similar vein, production efficiency improvements were cited by some companies as ways of reducing costs. This usually meant that where demand justified it, production batch sizes were increased to achieve lower unit costs which could be passed on to customers by a price reduction.

In contrast to stimulating demand for ailing products through product and price alterations, companies reported that increased effort by the sales force, greater use of print-media advertising and more sales promotion were tried and tested means of encouraging sales.

6.5.6.9 Increasing Sales Force Effort

An increase in effort by the sales force can be achieved through higher incentives, sales competitions or through a period of re-training to establish the "selling proposition" of the product in question in the salespeople's minds:

"Your first response is always through the sales force, you increase the commission. That is tried and tested, it works. People are always motivated by money".

Marketing Director E2

"Once you know 'why' maybe there's something you can do about it - perhaps run a sales campaign, give salesmen a little extra training".

Product Manager C2

However, despite the popularity of this corrective measure it can be somewhat short-term in its approach, especially if incentives are part of a larger promotional deal. The point is neatly summarised in the words of the Marketing Director of a large company manufacturing paper:

"Our sales force is on a fixed salary, and we don't employ incentives as we're sceptical of short-term boosts. In some industries if you can double your sales of beans for a month that's great and it doesn't matter if your customer doesn't buy again - sales will fall back to a normal level. But here we're talking about 20 potential customers in the whole of the UK - it's only shuffling the problem, not solving it".

Marketing Director B1

6.5.6.10 Increase in Sales Promotion

Also reserved for short-term use was an increase in sales promotion. This meant attending trade shows, increasing and revamping sales brochures and literature as well as incentives for the distributive trade:

"With the trade, there's often a confidence barrier that has to be hurdled and then you're in trouble because the dealer won't push it, so the price promotions can often help".

Marketing Manager C5

"We have a facility here for special promotions, and the Sales Director, in collaboration with the Marketing Director, will authorise special promotions - extra money to bigger accounts to stimulate the business through price cuts".

Marketing Manager C6

6.5.6.11 Greater Use of Print-Media Advertising

Increased advertising was also reported to mobilise customers' support. The Marketing Director of a large company manufacturing domestic appliances commented that "as a consumer goods manufacturer you often have to turn up the volume through advertising and promotion". The advertising response was popular in, but not exclusive to, the consumer goods companies:

"More often than not our first response is to do almost anything to keep it alive, rather than drop out. Product development is so expensive, and if we can, by a little more advertising, keep it above break-even, we will".

Marketing Director D4

However, some respondents were of the firm opinion that promotional activity was very much a short-term answer, especially where mature products are concerned:

"We would turn to promotion - in maturity only - as a short-term palliative. In early days it might be a factor, but with a degree of maturity [in the product] if it's beginning to wane then there's probably a macro spin against it [the product]".

Marketing Director C1

6.5.6.12 Development of New Markets

Two improvement options suggested by respondent companies related to the marketplace. The first is to extend the product to new markets to enhance sales performance.

"We used to supply tubing for tumble dryers. There is a tendency now with tumble dryers to design them in such a way as to eliminate the need for tubing. That affects us and we have to find another door to open - we have - D.I.Y supermarkets".

Sales and Marketing Director D3

A similar option in this connection is for the company to export the product, thereby increasing its sales base.

6.5.6.13 Market Concentration

The second market-related option reverses the procedure. Market concentration involves withdrawing a product from those markets or segments where its performance is sluggish.

6.5.6.14 Distribution Improvements

A further two corrective options are connected with the channels of distribution. The first of these, distribution improvements, attempts to improve the display or shelf space given to a product by the distributive trade. A number of companies underlined the importance of shelf space to the sales of their products; all were consumer goods companies. The Marketing Director of company A1, a relatively small manufacturer of fresh foods, explains that, as the retail multiples became bigger and accounted for a larger share of consumer purchase, and as their allocation of shelf space became more and more centralised, "it became as crucial to negotiate the 'number of facings' given to a product as it was to negotiate entry to the store itself". Accordingly an increase in shelf space could greatly enhance sales of the product.

6.5.6.15 Change in Channels of Distribution

The second option is change in channels of distribution and was only feasible where a few key wholesalers and retailers did not account for a large proportion of sales. In the current study, companies attempting to improve sales performance by a change in channels of distribution were involved in exporting through agents.

6.5.6.16 Price Increase

While a price increase could often increase the speed of an ailing product's demise, this was not always the case. Where declining markets were involved, companies increased the price of products to increase the yield of the products in those markets:

"The price of quartz clocks is still coming down, and the old spring-wound clocks' prices are now rising. We feel certain spring-wound clocks will decline. Now, if we're wrong it doesn't matter because we can milk the cow longer, but if we predicted it wrong the other way manufacturing would gear up wrongly".

Product Manager C2

"We withdrew the multipack version of this last year, and we were going to withdraw the single this year, but we decided on an alternative strategy of milking the brand. We've raised the price by 2p which is enormous. It's now 18p and weighs half the weight of a Mars Bar! Sales have improved! Don't ask me why - it earns over £½ million!".

Marketing Director A4

In some cases, however, price increases were seen to be futile.

6.5.6.17 Factoring or Sourcing

The final "corrective" measure amounts to a psychological elimination of the product. Deciding to buy the product rather than make it, or sourcing it, allows a company to market the product without having the production headaches that accompany a product in decline.

6.5.7 Corrective Actions - Some Observations

Among articles dealing with "the revitalisation of products", those written from a normative stance appear to outnumber those based upon empirical enquiry. Alexander (1964) suggests lowering production costs, increasing batch sizes, reducing promotional activity, improving the product and increasing the product's price as ways of revitalising. To this, McSurely and Wilemon (1973) add, "private branding", "features improvements", "style change" and "mechanised order handling". While these examples are not comprehensive in their suggestions, it is not difficult to deduce that what is wrong with the product could render either author's suggestions useless. The majority of Alexander's solutions seem to tackle the situation where sales and profits are falling, due to the old age of the product. McSurely and Wilemon's suggestions appear to encourage total relaunch of the product. Neither author mentions the practical barriers to the alterations they forward.

Turning to empirical writings, of which there are relatively few, we are greeted by the much more imprecise reality of the business world.

Avlonitis (1985) provides evidence of the breadth of corrective measures considered by management in the engineering sector. They include: product modification and improvement, increase in the product's price, increase in effort by the sales force, increased promotional expenditure, changed channels of distribution, decreased promotional expenditure, development of new markets or applications. Some alterations to this list have been provided by the current study. While the first of Avlonitis' corrective actions, "product modifications and improvements", encompasses, by definition, all the varied methods of modifying and improving, the current study has separated these methods. Hence, "production efficiency improvements", "quality improvements", "cost reduction", and "product modification" appear individually to provide greater insights into the possibilities for, and hindrances to, "modifying" and "improving" products. Similarly, and for similar reasons, "greater use of print-media advertising" and "increased sales promotion" are treated distinctly, rather than combined into "increased promotional expenditure". A number of "new" methods of revitalisation have been found to be of use to British manufacturers. They are "packaging changes", "distribution improvements", and "guarantee/warranty extension". The first two clearly result from the fact that this is the first major study of product elimination in British consumer goods companies. Three "new" corrective actions are especially interesting because they involve a "range" decision. Rather than responding to the problems of a specific product by tackling it on its own, the managers involved considered amendments to the entire range, through extension, reduction, or concentration of sales in fewer markets. Although range decision-making is not pursued further in the current work, this is an area for research which would examine product policy decisions from the broader perspective of the entire range.

In his work, Avlonitis concludes that the "most important" method of revitalisation was "product modifications", followed by an "increase in price". In the current study we have already

postulated that, as the types of corrective actions will largely depend on a number of idiosyncratic factors, including the specifics of a given situation, it is somewhat meaningless to classify these actions in terms of generalised importance. Perhaps this would help explain why the average scores of importance in Avlonitis' findings were comparatively low. Of much greater interest, we contend, is what causes the importance of factors to shift.

The average number of corrective actions cited by the sample companies in the current work was 3.6, although no discernible difference could be detected regarding the number cited between large and small companies, or among different industries. Where differences could be detected, this was in the nature of the corrective action considered, rather than the number. For example, "packaging changes" was an option mentioned only in industry category A - fast-moving consumer goods - which is not surprising since these companies are jostling for extra distributive space, and these were fixed with their customers annually.

6.5.8 The Effect of the Precipitating Circumstances on the Revitalisation of Product Elimination Candidates

So far, in dealing with revitalisation methods, we have made reference to the "general" part of the interviews. Looking more closely at the product-specific data, the case histories, we see that, clearly, the precipitating circumstances profoundly affect the way in which a product may or may not be revitalised. (See Table 6.5.4).

6.5.8.1 Declining Market Potential

Eight products were dropped due to having "declining market potential", out of which only one underwent any form of corrective action. The rate of decline was felt to be such that management as reluctant to spend further money.

6.5.8.2 Poor Sales

Although a wide variety of corrective measures were considered where a product was experiencing poor sales despite a generally viable market, of the ten case histories in this category, four featured the use of sales force incentives to attempt to lift sales.

6.5.8.3 New Product Development

Of the four cases where a new product was introduced due to the activities of competitors, in two instances the old product was reduced in price, so that market share was not lost before the new product was introduced. Where a new product was developed for internal reasons the "gap" was not so important as the old product had not yet begun to lose sales or money.

6.5.8.4 Poor Product Quality

In the four cases where a product was dropped due to poor quality, the only corrective action considered was "quality improvements".

6.5.8.5 Rationalisation

In the four cases of rationalisation, no corrective action was taken, which is understandable, given that for unrelated reasons, it had been decided to drop the product. In short, there was nothing to improve. In a similar vein, the one case of a product being dropped to release resources did not include a corrective stage.

These findings are summarised in Table 6.5.4.

It is apposite, at this point, to draw attention to the fact that usually, more than one corrective measure was taken, and, as we have seen, those methods depended on what was perceived to be wrong with the product. However, at this stage in the product deletion process, one is essentially dealing with the decision to stay with the product - in its present or a modified form - or to weigh up

Table 6.5.4 The Precipitating Circumstances and Methods of Revitalisation of the Case Histories

Precipitating circumstances (and companies assigning a specific deletion to them)	Method of revitalisation used
Declining market potential	
A3	None
A6	None
C4	None
D2	None
D2	None
D7	None
E1	Development of new markets
E6	None
Poor sales only	
A1	Improved distribution <u>Increased sales force effort</u>
A4	<u>Increased sales force effort</u>
A4	Price reduction Increased print-media advertising Market concentration
A5	Increased print-media advertising Increased sales promotion Packaging changes <u>Increased sales force effort</u> Price reduction
A7	Packaging changes Increased sales promotion
C1	Increased sales force effort
C1	None
C2	None
C6	None
D5	None
New product development due to competitive activity	
C3	Price reduction
D3	None
D5	None
E6	Price reduction
New product development	
A2	None
A5	None
B2	None
C5	None
D7	None

Table 6.5.4 (cont.) The Precipitating Circumstances and Methods of Revitalisation of the Case Histories

Precipitating circumstances (and companies assigning a specific deletion to them)	Method of revitalisation used
Poor product quality	
C4	Quality improvements
D7	None) all looked
E2	None) at quality improvements
E3	None) but none were affordable
Rationalisation	
B3	None
B3	None
C6	None
D6	None

the pros and cons of deleting it. It should not be assumed, however, that because a decision has been taken not to revitalise that this is an optimum choice. It may be that a company cannot afford to prioritise a revitalisation investment as in the cases of poor product quality (see Table 6.5.4). Alternatively, it may be felt that "nothing is feasible", that the problem has been kept over too long a period of time and that the product would have to go.

6.5.9 Summary

This section has described the way in which the interview sample companies diagnose a product's circumstances and revitalise it. The diagnosis, or analysis, need not be formally initiated or very deep. The interviewees described 16 issues that can be looked into to help them gain an insight into the product's situation.

The analysis stage seemed to be reserved for poorly-performing products, and the analysis issues seemed to be strongly related to the initial precipitating circumstances.

Methods of revitalisation used were largely dependent upon what was wrong with the product. Problems with profit for example, were likely to be resolved by reducing the cost of the product or by increasing its price. However, each revitalisation method carried with it implications which would have to be considered. An increase in price may kill all demand for the product, while quality reductions, in the product itself or packaging, may detrimentally affect customer perception of the product or the firm. A decline in sales volume may be corrected by a price decrease, increased efforts by the sales force or improved distribution and more publicity, all of which would cost money and not necessarily enhance profits.

On the top of these issues is the question of perspective. Certain corrective measures are inherently short-term, seen as precursors to either the development of a new product or complete elimination. Sourcing, market concentration and product range reduction all herald the psychological abandonment of a product.

Some links have been made between the kind of corrective measures taken and the precipitating circumstances. Such links are somewhat contentious, based as they are on qualitative data, and need to be tested more objectively, by statistical analysis.

Section 6.6 The Evaluation of Product Elimination Candidates

6.6.1 Introduction

When a product has been revitalised without much success, or when management believes that no corrective action is feasible, or judges that the product's circumstances do not justify improvement or investment, the next stage is to evaluate whether elimination of the product is an appropriate course of action. Despite the neat and objective solutions forwarded by some of the earlier theoretical contributions to the literature (Alexander 1964, Kotler 1965, Hamelman and Mazze 1972), more recent empirical work (Avlonitis 1984, Gauthier 1985) would suggest that the evaluation stage is the most perplexing of the entire product elimination process. It is at this stage that a decision must finally be taken, with or without adequate knowledge, and usually complicated by uncertainty and risk. The words of the Marketing Manager of a small company manufacturing carpets (Company 6) summarise the dilemma of the evaluation stage:

"If we've got a product not selling particularly well, we'd try a special promotion. If that isn't successful we've really got to analyse whether we've got a long-term future with the product. If we reduce the sales budget, we then have to consider if we still need full-time working - we can't just go on producing something that's not selling. So there comes a point where we've got to bite the bullet".

Marketing Manager C6

Unlike diagnosis and revitalisation, which appear to be routines more or less reserved for weak products only, most elimination candidates appear to undergo some evaluation. While little evidence was forwarded by the sample respondents to suggest that they used a formal procedure for this stage in the decision, respondents demonstrated that, for each elimination candidate, a number of factors needed to be investigated and evaluated before a final decision could be taken. Depending upon the evaluation, the

product would be eliminated or retained. The factors considered at this stage of the decision - the evaluation factors - are explained below.

6.6.2 The Evaluation Factors - An Overview

As can be seen from Table 6.6.1, a total of 19 evaluation factors were described by respondents, which tends to support the notion that this stage of the decision is highly complicated. The factors can be categorised into two groups: internal and external factors.

6.6.2.1 Internal Evaluation Factors

In his study of the product elimination process in the engineering sector, Avlonitis (1984) highlighted that the financial implications of deleting a product, among others, tended to dominate the managerial evaluation of an elimination candidate. In the current study, four internal evaluation factors related directly to the financial implications of dropping a product. They are described below.

The Effect of the Elimination on the Recovery of Overheads

As can be seen from Table 6.6.1, this evaluation factor was one of the most frequently cited by the sample companies. Managers were acutely aware that even the slowest-selling lines often contributed to overhead costs, and that in removing one product, its contribution would have to be absorbed by the remainder of the product range. This, in turn, means that often there is no net advantage in dropping the product, and that there may even be a net loss, as is explained by the Commercial Director of a large company manufacturing dairy produce:

"We try to analyse the effect of elimination on profitability through our marginal costing system. We'll sometimes produce a product at a loss, knowing that if we take that product out of the production profile, the cost will go on to another".

Commercial Director A5

Table 6.6.1 The Evaluation Factors in the Sample Companies

		TOTAL
Product's market potential	A7 C6 C4 C5 B2 D6 E2 E6 A3 A6 A4 D7 D5 E4 C3	15
The effect of the elimination on total company sales volume	A7 A4 C6 C5 E4 A3 C1 C8 E3 A1 C4 E1 E6	13
Availability of a new product	C6 C4 E2 E6 A3 A5 C1 D5 C5 E5 C3 E3	12
The effect of the elimination on recovery of overheads	A7 C5 D6 E1 E6 D2 D3 E5 A5 C1 C8 D7 D4 E3 A3 A1 A4 C6	18
Re-allocation of resources to other opportunities	E6 D3 A1 A3 A4 C3 D2 C2 C3	9
The effect of the elimination on distribution (eg loss of shelf space)	A2 A1 A3	3
Re-allocation of executive and selling time	E5 A3 A4 E3 D2 E2	6
The effect of the elimination on fixed capital (ie plant and equipment)	A7 B1 C6 D3 E5 A4 E3 A5 D6	9
Interchangeability (commonisation) of parts, materials or packing	C6 E4 A6 C7 C1 C2 D2 E2	8
The effect of the elimination on "full-range" policy	B1 B3 B2 C6 C3 D3 A2 A1 A6 A5 A4 C7 C1 C2 E3	15
Existence of substitutes to satisfy the customer	B1 D2 D1 D2 D6 B3 D7	7
The effect of the elimination on sales and profitability of other products in the range	B1 B3 B2 C3 C5 C6 D6 E5 A4 C8 D7 A5	10
Product's contribution to a profit centre (eg branch, factory, depot)	A3 A5 A4 C8 A2 B3 D5	7
The effect of the elimination on company image	A2 A4 C3	3
The effect of the elimination on capacity utilisation	A7 C6 C3 C5 E1, A2	6
Competitive reaction to the withdrawal	B3 E5 A1	3
Customer relations	A7 B1 B3 B2 C6 D6 E2 E6 D2 E4 A1 A6 C1 C2 D7 D4 D5 E3 C4 E6	20
The effect of the elimination on working capital (eg stock)	C6 C4 A5 A4 C2 D7 E1 D6	8
The effect of the elimination on employment prospects of the workforce	C6 D2 D3 E5 A4 D5 A3 E1 D6	9

"We currently keep one pump in the range which is not profitable, but it does contribute to overheads".

Chief Executive E3

The Effect of the Elimination on Sales and Profits of Other Products

The profitability of other products can be affected by the elimination of one product from the range, as is described by the Commercial Director of Company A5 above. In addition, where there is a degree of complementarity among the company's products, the removal of a product has to be considered in the light of its commercial association with any other product in the range. For example, the Marketing Manager of a small company manufacturing carpets explained how the sales of fast-moving products were related to the existence, in pattern books, of slow-moving items. This tended to defy the "accepted logic" of deletion:

"Even though I can guarantee from a range of products that four out of ten account for most of the sales, if I take six away, I won't even get the same amount of sales from the four remaining. It's hard to believe sometimes, but it is a fact and you can't dispute it; we tried it and it didn't work. You can't have a pattern book with four colours".

Marketing Manager C6

"We sell a tumble dryer which is designed to stack with a washing machine. We sell a larder fridge designed to sit alongside a freezer, and those would be factors to consider".

Product Manager C5

The Effect of the Elimination on Total Company Sales Volume

The prospect of a shortfall in sales volume appeared to inhibit management going ahead with the decision to drop a product. While normative arguments in favour of product elimination cite greater efficiency, productivity, perhaps even higher profits, as examples of the benefits to be gained, several respondents expressed the need to achieve volume targets:

"I always feel there's a certain pressure not to eliminate, to keep these millions of dollars up, so what we really need to do is to try to examine the cost of keeping some of those products alive..... Is it a million dollars worth having?"

Product Manager E6

Equally, having a few slow-moving items may lessen the urge to rationalise, if no immediate saving can be made:

"We have a broad objective of trading at £1000 per week, per product, which is a minimum standard. We do have some at less than that, but if we've got twenty products each doing £500 per week, that makes £10,000 per week overall, or half a million a year. If we lose half-a-million, we've a lot of money to save, or make".

Marketing Director A1

Alongside the rational reasons for avoiding a loss in volume was the expression that "nobody likes to lose volume", especially in a market of any potential:

"Then there's the overall size of the market....is it a big-volume market, and will we lose it? No-one likes to lose volume".

Marketing Director A4

The Product's Contribution to a Profit Centre

A product can gain management's attention because of its poor performance in relation to other products in the range. Yet, its particular manufacturing or marketing circumstances may make it vital to a part of the company's operation. The Commercial Director of Company A5 explains how a regional operation may depend on a product which appears "weak" on a national comparison:

"The 80/20 principle is interesting because if you look at national sales figures you might find one product right down at the bottom which turns about £100,000 in a company with a turnover of over seven million. When you look more closely, though, it's £100,000 in one depot or factory and it's often fantastic business for them".

Commercial Director A5

Similarly, the management of a small company manufacturing cakes and biscuits experienced resistance to their plans to delete a product which was important to a factory's profits:

"The factory was very unhappy because they made a fair amount of the product and they do have their individual profit standards to achieve, which we were going to have a dramatic effect on".

Marketing Director A2

The "financial implications" focus managerial attention on the effect a product elimination will have on the company's ability to generate income. However, the reverse side of the profit coin is also affected by the decision to eliminate a product, namely, the resources used to create products which generate income. Five evaluation factors relate to the implications for resources that dropping a product may entail. They are described in turn.

The Effect of the Elimination on Working Capital

Raw materials, parts and ingredients that go to produce a product, as well as finished stocks, are affected by the decision to drop a product. Essentially, there are two choices: either drop the product and write off the losses, or defer the elimination until the working capital involved in the product is finished, or reduced to an acceptable level for disposal. Discussions with management over this issue suggested that the existence of working capital did not so much influence the decision "whether to" drop a product, as "when to":

"We'd need to look specifically at parts we would not be able to use in other areas. That's all water under the bridge. They would be produced and cost us money to maintain as stocks, therefore it's just a question of biting the bullet and taking the loss as it comes, writing off the stock".

Product Manager D7

In fact, this factor was one of the few guided by any kind of objective guidelines:

"Up to a certain figure a product manager can write off stock. If he wants to write off more, it goes to a higher level. If we've got five months' stock, we'd probably keep a product going until the next six-month review, and then we'd decide whether to run it again at that meeting".

Marketing Director A4

Commonisation of Parts, Ingredients or Raw Materials

Where the elimination candidate shares either raw materials or parts used in the manufacture of another product, the need to drop is often reduced, since the disadvantages in holding stock for the elimination candidate are eclipsed by the fact that the stock will be held for other purposes:

"Where there are a lot of common parts, there's no real disadvantage in keeping on a low-volume product. If it's only the dial colour that separates one clock from another, then if a customer wants a variation, it's no real problem to keep it on".

Product Manager C2

Indeed, this factor is not only related to "the effect of the elimination on working capital" but also to the "the effect of the elimination on sales and profits of other products", as the cost base of two products manufactured from similar components will also be affected:

"If there's a high proportion of parts common to two or more products, you needn't take one out of the catalogue. In fact, we'd never drop one product which shared common parts with another, for fear of changing its profitability status..... they help each other so much in terms of economic production batches".

Marketing Director E2

The Effect of the Elimination on Fixed Capital

Where capital equipment is used exclusively to produce a product which is being considered for elimination, that equipment has to be redeployed, written off or sold. The specific circumstances of the company may well prohibit any of those options, leaving management in a position where it "might as well" continue with the product:

"Generally, we have to consider plant and the implications for that. One thing you can do is sell the machinery, or reallocate it, as long as that is not going to obsolete more machines in turn".

Sales and Marketing Director D3

As with shared working capital, where two products share plant or machinery, the proposed deletion of one product may adversely affect the other. The Marketing Director of a large confectioners' explained that one manufacturing line was dedicated to three distinct brands. One brand had already been dropped due to sluggish sales, but they could not drop a second candidate, as this would precipitate the withdrawal of the third, relatively successful, line.

The effect of deleting a product, leaving machines and buildings under-utilised, is even more severe in times of recession, where firms are operating below capacity. This is explored further below:

"We knew about it for two years. We should have been doing something about it - it was a question of taking the decision. I think the delay was largely due to the utilisation of existing plants. That's always a major battle".

Commercial Director A5

The Effect of the Elimination on Capacity Utilisation

While this is related to the issue discussed above, where a company is working below capacity, the normal benefits of dropping a product (cost saving, reallocation of resources) are unlikely to be felt. This is because there is no overload in any part of the operation which would benefit from redeployment and few cost savings can be made on idle plant. Thus, the incentive to drop a product is vastly reduced:

"When we were on short-time working, people were producing anything and I support that - you don't just drop products because of hard times. You try to keep making them, keep people working".

Marketing Director E1

The Effect of the Elimination on Employment Prospects for the Workforce

Dropping a product often entails a good deal of disruption for the company's employees, and respondents described how this served to discourage product withdrawal:

"A number of factors about product deletion concern us. We're anxious, for example, not to have to let manpower go. It's a very depressed area and we're one of the bigger employers and we like that reputation. It helps you function in a community".

Sales and Marketing Director D2

The General Manager of Company A3, a large concern manufacturing instant food and beverages, explained that concern for maintaining jobs led management to favour only a partial withdrawal of an elimination candidate.

The Availability of A New Product

The nine internal evaluation factors discussed so far postulate on the commercial and operational context of the firm where a "gap" might be left due to the proposed elimination. These issues were often less important where a substitution or new product was envisaged. For example, an important evaluation factor is the effect of an elimination on the recovery of overheads. However,

the defrayal of overheads is less important where a replacement product is available, as the Marketing Manager of a small company manufacturing kitchens explains:

"Overhead recovery is important, but if we've got a replacement the overheads will be defrayed by the same number of products as before, so that's no problem".

Marketing Manager C5

In some companies, it was at the evaluation stage of the decision that the need for a new product would come to light:

"Our first motivation is always to replace products. Any move which has an impact on sales volume is of paramount importance and it has been known for us to have a replacement ready within a month".

Marketing Manager C5

"The declining range is maintained until a new one is ready. We do try to forecast what is going to become weak so that a replacement is there".

Managing Director C1

The availability of a new product was an important issue for companies with narrow product ranges:

"We're not in the position of having a big enough range to drop things that just don't suit us".

Sales and Marketing Director E5

Similarly, Company C3, with a product portfolio comprising two major product ranges, always developed a new product range to replace those in decline.

In short, the availability of a new product would tend to dissipate, to some extent, the concern for recovery of overheads, sales and profits of other products in the company's range, maintenance of overall volume, fixed and working capital, capacity

utilisation and so on, since a new product would fill the gap left by the deleted product. Complete relief from such concerns would depend on how well the new product performed - an issue well beyond the scope of the current study.

Opportunity Cost Factors

The final internal factors relate to the opportunity cost of supporting an elimination candidate in the range. Specifically, the reallocation of a) resources and b) sales or executive time were cited by respondents as criteria for evaluating elimination candidates. Where resources or executive personnel could be transferred, the decision to eliminate could be made more easily, as the potential benefits of deletion were more obvious to everyone concerned. This said, a number of companies made the point that although theoretically and logically sound, the argument was difficult to quantify or prove:

"We need some form of planning to point out to people what the real cost of keeping a product going is - to quantify the marketing, production and sales support that could be transferred".

Product Manager E6

"We find it difficult to reallocate resources generally. You can't prove that a brand sells better due to increased time spent on it by the brand manager since he dropped brand Y".

Marketing Director A4

The foregoing discussion highlights the fact that these 12 internal evaluation factors are interrelated. A reduced product range affects both sides of the profit equation - income generated and costs incurred. Above all, the respondents underlined that lost revenue and profit is rarely complemented by a corresponding drop in manufacturing and marketing expenditure. These sensitive issues are further complicated by insufficient information about the cost structure of the entire range, which in turn perpetuates faith in

volume as a solution to business problems. The most certain route for an elimination to take is through product replacement. By assuming the cost burden of the deleted product, the replacement alleviates, to some extent, managerial concern for the company's cost structure. It also presents a clear opportunity to which resources and executive time may be reallocated. These are, however, somewhat introspective concerns. The remaining evaluation factors are used by management to gauge the impact that a proposed elimination will have on the marketplace.

6.6.2.2 External Evaluation Factors

The Effect of the Elimination on Customer/Trade Relations

This factor was deemed important by many of the companies interviewed, for various reasons. Firstly, a marginal product may well support business with a customer placing valuable orders that the company does not want to lose:

"... If we're making something that's a nuisance, but not a disaster, we have to ask ourselves, should we keep it on because it supports business with a major customer? It may be 2 per cent of what he buys, but he really wants to have it and has to be given the 2 per cent for us to get the 98 per cent more profitable part...."

Marketing Director B1

"Often, although we are only selling a quarter of a ton per week, we find that the whole amount is going to one major customer. We've a situation like that with our loose skinless sausages - only one customer, a main customer - buys them. The fact that they took a lot of convincing to stock them in the first place, only makes the deletion more difficult now".

Marketing Director A1

Secondly, a customer may be dependent upon a marginal product, which creates a complication when the product becomes a candidate for elimination:

"We had a customer in Scandinavia whose sole source of the product was us. We had problems with the product, and with finding other customers for it, and we wanted to drop it. But we had to agree to help them find an alternative source".

Sales and Marketing Director D2

In most cases, although the companies tried to reduce the inconvenience caused to customers, the products in question were merely granted stay of execution. It should be noted, however, that Company D2, whose Sales and Marketing Director is quoted above, were still producing the product for the Scandinavian buyer 18 months after taking the decision to drop it! Nevertheless, more typical is the following instance described by the Product Manager of a large paper mill:

"We had private discussions with Chief Executives in some companies, giving them six months' notice - as long as they kept it secret - to allow them to develop a second source of supply".

Product Manager B2

Thirdly, even where a product was being replaced, customers' views would be accommodated. Again, the Product Manager of the large paper mill explained:

"Those stockists who had carried the old brand exclusively were visited. The situation was discussed with them, and the alternative of them becoming a new-brand stockist was reviewed - but it wasn't automatic".

Product Manager B2

The Marketing Manager of a small company manufacturing carpets explained that one relatively low-volume line was maintained for a customer, as there was no replacement available in the company's product range in the price/quality bracket the customer catered for.

Existence of Substitutes to Satisfy the Customer

Even when management has decided to forego sales of its own products with a customer, it may be reluctant to finalise the decision where no other substitute product is available in the market. As the Managing Director of a small company manufacturing capacitors explained:

"The main consideration is customer relations. If dropping a product gives them availability problems then we'd keep it. If they can get it elsewhere, we'd let them".

Managing Director D1

"We're reluctant to leave customers where there's no substitute available in the market, and that, in the past, has encouraged us to keep a product".

Sales and Marketing Director D2

The Effect of the Elimination on "Full Range" Policy

There was a general feeling expressed by respondents that, if a company is serious about serving the needs of a market, then it should carry a wide selection of related products. This point was explained by the product manager of a large company, domestic appliance manufacturers:

"If we're in the home laundry business, we need to sell washing machines and dryers, so theoretically at least, we would accept a less profitable situation on tumble dryers than we might do on another product range that stood on its own, because we feel we need tumble dryers as part of the home laundry range".

Product Manager C3

"There are a few products which fall below our minimum standards, possibly Swiss rolls are an example. We need Swiss rolls - no cake range is complete without having a couple of Swiss rolls - so they're in for range reasons...".

Marketing Director A2

The Managing Director of a large company manufacturing carpets made a similar point:

"... Persian carpets are not in the mainstream of carpet fashion, but if we don't have it somebody's going to ask for it. To a degree we do have a full range policy... there are certain things you'd be very foolish not to have, a red carpet for instance".

Assistant Managing Director C7

Similarly, the Chief Executive of a firm manufacturing pumps described how a range of pump sizes had to be catered for, even if this meant that outlying sizes were less profitable.

The Effect of the Elimination on Distribution

This evaluation factor was exclusive to consumer goods companies, and referred to the problems associated with shelf space. The increasing competition for space in the supermarket is a major preoccupation of manufacturing companies, which, if serious about reaching the majority of consumers, have to be listed by the major multiples. Once listed, maintaining shelf space is of major concern, as it is indirectly related to sales turnover. The General Manager of a large company manufacturing instant food and beverages highlighted these concerns, relating them to the product deletion decision:

"If we remove one product from the range we don't want its space on the shelf to go to another producer. This is particularly important where space is tight and there are a great many products. We have to be very aware of trade objectives in terms of sales per square foot, and of the level of trade support for other products".

General Manager A3

The question of the implications for the company's shelf space is also linked to an issue mentioned earlier, namely, loss of overall sales volume. If a company withdraws a product, and shelf space diminishes accordingly, a loss in overall sales volume will ensue.

This factor may cause a company to hesitate:

"We have an amount of shelf space in a supermarket. If I could be sure that I'd keep the same number of facings on the shelf, we could reduce our 20 lines down to 12, and sell the same amount, maybe even more. But if we take 8 lines out, invariably we'd lose space at the same time".

Marketing Director A1

The Product's Market Potential

One of the most powerful evaluation factors is the market potential that management believes the product has. Indeed, Company A3 kept a low-volume product in the market for 20 years, such was its commitment to the product-market and belief that the product had potential. A similar view is expressed by the Marketing Director of a company manufacturing automotive components:

"The most important factor is the long-term viability of that product. If we could see a long-term future we would keep it. If there's no prospect we'd have to look at how to get rid of it".

Marketing Director D5

Exactly what it is about a 'weak' product that makes management committed to it was difficult to ascertain, and usually situation-specific. The Sales and Marketing Director of a large company manufacturing printed circuit boards emphasised that commitment to a product was related to corporate strategy:

"Whether or not we're going to keep that product on depends on whether or not we see any measure of strategic need to have that product".

Product Manager D7

The Marketing Director of a large company manufacturing domestic gas heaters (Company C4) related the importance of commitment to the potential that managers perceived in a particular market:

"The product life cycle is too nebulous a concept, but it must be borne in mind for market positioning, although the cycle can change and can't be fixed. We are certainly more likely to keep on a product in a market we see as having potential".

Marketing Director C4

The Product Manager in a large paper mill explained that there was commitment to a product line which, although slow moving by company standards, was quite a big product in its own product-market:

"In the first instance there was a very big stock range [of items], and although some of them were uneconomic by our manufacturing standards, we didn't eliminate because to have done so would have undermined its position of brand leader. It is twice the size [in volume] of any other brand in the market, so we would have been cutting its own legs away".

Product Manager B2

"Even if our [Market] share is low, it's hard to drop one product whose unit sales are higher than another's, even if there are reasons behind the scenes for doing so".

Marketing Director A4

"For example, we have a malt whisky which is not promoted, not price-supported. It is exported as a reasonably-priced whisky. It delivers a level of profit which is low, but in volume terms it is acceptable, but which as a contribution to the company's business, is tiny. If it was one's own business, one would discontinue the product, but it is our only representative of that category of whisky so it is kept".

Marketing Director A7

The Competitive Reaction to Withdrawal

Even where a product is performing poorly, the prospect of competitive products taking over seemed to hinder the decision. In accounting for this reluctance, respondents expressed an unwillingness to open a gap in the market which might be filled

- perhaps even more successfully - by competitive products. The Marketing Director of Company A1, manufacturers of fresh and frozen foods, detailed his dilemma over variety reduction. While he wanted to reduce the range, he feared that the shelf space would be too small to match the major competitor's ranges, who had a much wider variety than his own current range. The breadth of the competitive range seemed to make him less sure of the need for, or benefits that would derive from, reducing the range. The psychological reluctance to drop a product for fear of competitive actions was not confined to one industry:

"The product is unprofitable, it requires very specific sales skills that we have in short supply. In the rest of the world, we only have two other competitors - you can see why we're reluctant to drop it".

Sales and Marketing Director E5

In an oligopoly, a situation describing Company E5 above, the potential effects of dropping a product appear magnified: three or four high-profile producers have much to lose - and visibly - in terms of volume, market share, image and reputation. The reality of this fear of competitive reaction is hard to gauge. For example, Company A3 finally pulled out of a market after a major competitor had taken the first move out. The company did not move in on the residual demand for the competitor's product with a view to mopping it up. On the other hand, Company D1, manufacturers of capacitors, had a major strength in its ability to provide a flexible service to customers who had been let down by bigger suppliers as the latter moved into newer product-markets.

The Effect of the Elimination on Company Image

A company's market position is usually related, not only to the total package it offers the customer, but also to the customer's perception of that package. Respondents showed a sensitivity towards customer perceptions, some even included this in strategic plans, wishing, over a period of time, to foster a certain image or

reputation. Several managers were sufficiently aware of their companies' image to allow it to influence their deliberations on product withdrawal:

"We don't like withdrawing products because it implies failure and it's dangerous to have too many".

Marketing Director A4

Also, where a company's identity is typified by a product or product ranges, the emphasis tended to be towards development and replacement. This said, such "typical" products were also usually central to the financial health of the company. However, the combined effects of two or three considerations on the decision appeared to be more powerful than any of them singly:

"If something went wrong with our upright cleaners, we've got a serious problem, as they are so strongly identified with the company, so therefore we would have to take drastic action to ensure the range was improved. It's not only the image, but the very big profit contribution that they make".

Product Manager C3

6.6.3. The Evaluation Factors - Some Observations

This overview bears witness to the breadth and complexity of issues that concern managers faced with the choice between dropping or retaining an elimination candidate. Previous normative work in the 60s and 70s that focused on this stage of the decision introduced many of the evaluation factors which this study and previous studies have confirmed empirically. The effect that a proposed deletion might have on other products, the company's image, or the defrayal of overheads, for example, have been forwarded as important considerations by several theoretical writers (Worthing 1975, Berenson 1963, Alexander 1964, Kotler 1965).

More recently, research into this stage of the decision has uncovered further issues of managerial concern. The availability of substitutes or replacements, competitive moves, the effect of

eliminating a product on the company's employees and the extent to which the elimination "fits" with company objectives, are examples of evaluation factors brought to light by research in the field (Avlonitis 1984, Baccour 1971, Rothe 1971). The observations made through previous studies have, in their own ways, been limited. Avlonitis' study was limited to companies in the engineering sector; Rothe failed to differentiate among decision stages and instead concentrated on issues more relevant to the recognition or diagnosis of elimination candidates.

The present study has shed light on yet more facts which are taken into account by managers coping with decisions about product elimination. Specifically, these are:

1. The effect of the elimination on distribution (e.g. the loss of shelf space).
2. A product's contribution to a profit centre.
3. The effect of the elimination on total company sales volume.
4. The effect of the elimination on capacity utilisation.
5. Inter-changeability (commonisation) of parts, materials or packaging.
6. The product's market potential.

Not all factors, however, are equally important, nor do all of them have to be considered on every occasion. The number and nature of factors evaluated and the extent of the evaluation were subject to many influences which are touched on in the next paragraph. In addition, there was little evidence to suggest a formalised evaluation procedure of the type expounded by normative theory. There were no tabulations, weightings or ratings of factors, no index of product desirability produced to aid the decision. These findings confirm those of Avlonitis who also stresses that managers do develop "more or less clear perceptions of what factors need investigation in evaluating a weak product and in making the retention/elimination decision" (1984). It is also true to say

that, even where a product is not "weak", managers have a clear view of the considerations that impinge upon the eventual decision to eliminate a product. For example, Company A1, whose management was keen to reduce the variety of products, was all too aware of the practical constraints of implementing a policy of variety reduction, which, theoretically at least, would simplify their operations:

"We know immediately.... there's no delay in looking or seeing.... but take the example of a frozen food product that has gone below the [minimum] level. We've tried lots of things to help it, but they don't work, so we know it's going to scrap. Do we take four to five thousand's worth of packaging and write that off, or do we continue with the line doing a fraction of a ton per week?... If we stop the product we will not tangibly save money on that one product line, so the only real way to save money is to take all those lines together and scrap the lot, and that's where we come back to the half-a-million drop in sales".

Marketing Director A1

Several respondents pointed to a lack of knowledge and information and the subsequent reliance on managerial experience and judgement, which tends to support the contention that a set of unwritten factors is evaluated, depending upon the specifics of the case at hand.

Another impression gained from the respondents was that, while there was no pressing need to delete a product, little effort was made to do so. Executive time might still be spent discussing the complexities of a slow-moving line, but unless actually losing money, the advantages which might be gained are not always apparent:

"I'd like to get rid of all this low-volume stuff that hangs around, but it is profitable. I asked my people last week to analyse three small brands to see what should be done, and I've just written to the MD about them to say the process is still doing very well... I'd expect to get a tidiness in the production operation, which is important. We'd reduce working capital, improve cash flow and most of all we'd knock off the need for salesmen to talk about x"

Marketing Director A4

While this commentator's remarks appear a little inconsistent, they highlight the dilemma facing many companies. Specifically, there is a feeling, based on logic, that the "low volume stuff" hinders smooth efficient operations. On the other hand, item by item, it does add a little to gross margins.

During the discussions with Managers and Directors involved in the product elimination process, it became apparent that many evaluation factors were considered in concert. Consider, for example, the range problems facing Company A1, small manufacturers of fresh and frozen foods. The Marketing Director was convinced of the fact that, as numbers of products increase arithmetically their associated problems increase geometrically, not only on the production line, but also in the warehouse, in dispatch vans and even in selling and pricing. Yet, a number of seemingly interrelated evaluation factors stop eliminations from taking place: loss of shelf space, loss of volume, competitive pressure. The structure of the market where the company operates and the nature of its marketing operation are such that the maintenance of sales volume is related, as explained above, to the maintenance of shelf space, which in turn becomes vulnerable if the competitors have more products available to encroach upon the space. Thus, the three factors act synergetically to impose a set of constraints on the company more powerful than they might appear individually.

Similarly, the "recovery of overheads" and "profitability of other products in the range" tended to figure jointly, since the removal of a product which might adversely affect overhead recovery might well adversely affect the profits of the remaining products.

It should be said, however, that consideration of the evaluation factors often led managers to conclude that a replacement product needed to be developed, and that the decision to withdraw was deferred, rather than stopped completely.

In describing the evaluation stage, the process, the nature and number of factors taken into account, the respondents in the current study confirmed the finding of Avlonitis (1984), that the importance of the product in question played a central role. While Avlonitis defines product "importance" by "the percentage of the company's resources and sales turnover that it [the product] accounts for", it is clear from the testimonies of respondents, that such a definition is insufficient. A number of related factors need to be incorporated: the amount of fixed capital invested in the product, the role played by the product in the company's competitive stance, the product's "level" (i.e. items in a range versus ranges of items).

Without doubt these issues are related to the amount of sales volume accounted for by a product, but even when viewed independently, they can have an impact on the nature of evaluation on their own, as the following citations illustrate:

"You must differentiate between dropping a model of a range and dropping a range in toto. Removal of a model is fairly relaxed: if it's not important to the range we'll take it out. If one means to remove a whole range then the most crucial consideration is the replacement potential".

Managing Director C1

"Old products fall into two categories: those individual lines which 'fall' off the bottom of the range and the 'category' of products - like sponges - which involve a bit more than deleting one item from the range; major policy to come out of sponges involves capital, since we've got one production line dedicated to that only. If we drop them what happens to the capital, among other things? To lose one item we don't even have to submit that to the Parent Group".

Marketing Director A2

From the foregoing discussion, and in the light of these quotations, it is evident that the greater the suspected impact of the deletion, the greater the intensity of the evaluation process. Further, a number of product-specific factors other than the percentage of sales volume seem to shed light on the likely impact of deletion. One final group of product-specific factors appeared to influence managerial opinion during the evaluation stage of the decision, namely, the precipitating circumstances that initially caused the product to be considered for withdrawal.

6.6.4. The Effect of the Precipitating Circumstances on the Evaluation Stage

In his study of the product elimination process, Avlonitis (1984) found that the "problem situation" greatly influenced the evaluation stage of the decision. However, the "problem situation" specifically referred to by Avlonitis is "new product development" and we have very little knowledge regarding the effect of other "problem situations". The study in hand confirms the finding that where management deletes an old product, replacing it with a new one, the evaluation factors often centre on the "availability of the new product", the "reallocation of resources" and the "reaction of customers" to the new product. However, careful scrutiny of respondents' accounts of specific product deletion decisions revealed that other precipitating circumstances have implications for the nature of the evaluation process. The following evidence is derived from the case studies, and is summarised in Table 6.6.2.

6.6.4.1 Rationalisation

While there was generally little hesitation over the four cases of rationalisation, as decisions had been taken with specific objectives in mind, the recurrent evaluation factor was "customer and trade relations". While it was desirable to drop the products in question, in all four cases a thorough appraisal of the effect on customers was undertaken.

6.6.4.2 Poor Product Quality

In two of the four cases where products were deleted due to poor quality, replacement products were to be introduced, in which case their availability was of primary importance. In the other two cases, where no replacement was to be developed, a major consideration was the "reallocation of resources and executive time to other opportunities".

6.6.4.3 Poor Sales Only

Ten products were deleted due to their low rate of sales, where the most frequently-cited evaluation factors were found to be "customer and trade relations" (four cases) and the "effect on fixed capital" (four cases). It is especially interesting to compare the former finding with the fact that, of the three products dropped due to poor sales and profits, not one mentioned the implications for customers. Although conclusions cannot be drawn from relatively patchy findings, it is intriguing to note the difference in attitude where money is actually being, or is near to being, lost.

6.6.4.4 New Product Development

Taking "new product development" cases, as well as those replacement new products which were triggered by "competitive activities" - a total of nine cases - the most salient evaluation factor is "availability of a new product" (five cases).

Table 6.6.2 The Evaluation Factors and Precipitating Circumstances

Precipitating circumstances (and companies assigning a specific deletion to them)	Evaluation factor
Rationalisation	
D6	Product's market potential Existence of substitutes to satisfy the customer <u>The effect on customer relations</u>
B3	<u>The effect on customer relations</u> The Existence of substitutes to satisfy the customer
B3	<u>The effect on customer relations</u>
C6	<u>The effect on customer relations</u> The effect on recovery of overheads
Poor product quality	
C4	<u>The availability of a new product</u> Product's market potential
D7	<u>Reallocation of resources to other opportunities</u> Existence of substitutes to satisfy the customer The effect on recovery of overheads
E2	<u>Reallocation of sales and executive time</u> The effect on customer relations Product's market potential
E3	<u>The availability of a new product</u>
Poor sales only	
A1	Reallocation of resources The effect on total company sales volume <u>The effect on customer relations</u>
A4	<u>The effect on overhead recovery</u> <u>The effect on fixed capital</u> The effect on working capital The effect on company image Reallocation of resources The effect on the workforce The effect on overhead recovery
A4	The effect on company image The reallocation of executive and selling time The effect on other products The effect on full range policy <u>The effect on fixed capital</u>
A5	<u>The effect on the workforce</u>
A7	<u>The effect on fixed capital</u> Product's market potential

Table 6.6.2(cont.) The Evaluation Factors and Precipitating Circumstances

Precipitating circumstances
(and companies assigning a
specific deletion to them)

Evaluation factor

Poor sales only

C1	None considered
C2	<u>The effect on customer relations</u>
C1	<u>The effect on customer relations</u>
C6	None considered
D6	The effect on sales volume
	The effect on the workforce
	<u>The effect on fixed capital</u>
	<u>The effect on customer relations</u>
	The effect on other products

New product development

A2	The effect on distribution
A5	The effect on working capital
B2	The effect on customer relations
	The effect on other products
	<u>New product availability</u>
C5	<u>New product availability</u>
D7	None considered

Competitive activity

C3	None considered
D3	<u>New product availability</u>
D5	<u>New product availability</u>
E6	The effect on customer relations
	<u>New product availability</u>

These postulations do not equip us with the ability to associate positively certain precipitating circumstances with certain evaluation factors. They do, however encourage the more general hypotheses that this stage in the decision, like the preceding stage, can be influenced by the original circumstances that caused the product to be considered for elimination. One of the major difficulties in deciphering the dimensions of such an influence, is the preponderance of other factors which also seem to assume importance at this stage. Already described is the "importance" of the product, to which we might add the replacement status.

In the current work products that were to be replaced (25 cases) seemed to be subject to less evaluation than those being dropped completely. Of the 25 products that were replaced, 6 did not undergo evaluation at all. Of the 25 which were not replaced, only 2 were not evaluated.

6.6.5 Summary

This section has reported the factors taken into consideration by the sample firms when the crunch of the decision comes. 19 factors were described by the respondents. The evaluation process seemed to alter in intensity depending on a number of product-specific factors, which together describe the likely impact that deletion would have.

The case histories suggest that there is some association between the circumstances triggering managerial concern and the evaluation factors considered, although it is highly tentative.

This stage of the decision is clearly the most subjective and qualitative dealt with so far, and this is reflected in the nature of the data obtained from respondents. This is also reflected in the comparative difficulty in pinpointing relationships among factors.

Section 6.7 The Implementation of the Product Elimination Decision

6.7.1 Introduction

The fourth and final stage of the product elimination process involves managerial organisation of the deletion both in and outside the company. Although conceptually it is a stage which is easily identified, partly because it involves doing rather than intellectualising, relatively few authors have set out to tackle the problems and issues facing managers actively involved in the mechanics of deleting a product from its range. However, from those writers who have dealt with this stage of the decision-making process, it is clear that a number of different methods of eliminating a product exist, and that the choice of methods depends on a number of factors. The methods are referred to as "implementation strategies" and the factors, "implementation factors". Both are presented below.

6.7.2 Alternative Implementation Strategies

Five alternative methods of deleting the product were described by respondents: drop immediately, phase out immediately, run out, sell out, drop from the standard range - retaining the capacity. They are shown in Table 6.7.1.

Table 6.7.1 Implementation Strategies

		Total
Drop Immediately	A7 A2 A6 C2	9
	A1 A3 A5 C5 C8	
Phase Out Immediately	A2 A1 A3 A5 A4 A6 C7 C1 C8 C2	31
	A7 B1 B2 B3 C6 C4 C3 C5 D6 E1 E2 E6 D2 D3 E4 E5 D7 D4 D5 D1 E3	
Run Out	C1 C5 C3 D2 E1 E2 A3 A6 C4	17
	A4 C6 C2 D1 D5 D7 E4 E5	
Sell Out	E2 B3	2
Drop Standard	D3 D6	2

6.7.2.1 Drop Immediately

Dropping immediately involved notifying the work force, the sales force, customers and writing off stocks of raw materials and finished goods. Virtually no complicating factors could be present for this option to be used, and only companies in the fast-moving consumer goods industry (Category A) claimed this as an option. Most of the interviewed companies in Category A used this option where ingredients, pack stocks, manufacturing lines and workers were largely interchangeable:

"Primarily, once the decision is taken - the sooner the better, and less painful afterwards".

Marketing Director A7

It should be said, however, that if stocks of raw materials or finished goods were present, then another option would be chosen, but where ramifications were few, fast-moving consumer goods companies could, where they wanted, drop immediately.

Respondents indicated that where a decision had been taken to delete a product of which there were stocks of finished goods, the "drop immediately" option was favoured. In some instances "the last of the line" would be sold off as a promoted offer:

"...Depending on the situation we're in, we can organise some sort of promotional activity to get rid of the products in some kind of job lots, at good prices to certain customers".

Commercial Director A5

"We usually give forward notice to the sales force who then tell the trade - but they usually have an inkling because of the way we agonise over the decision... We know all the write-off values involved, but because of the flexibility of the production lines, it tends not to be a problem, we can still use pack stock, and the same ingredients".

Marketing Director A2
(Paraphrased)

6.7.2.2 Phase Out Immediately

This implementation strategy differs from "drop immediately" in that it allows for the run-down of finished goods and raw materials, parts or ingredients, and allows the option of satisfying orders received up until the decision day. In practice, this seemed the most favoured option among companies in all industries:

"We make a little bar chart with the product manager and the logistics side working together and we would consider how long it would take to run down stocks and that would influence how soon we'd get the sales force to put the message across".

Marketing Director B3

As well as satisfying orders already placed, the simple matter of giving customers notice of withdrawal means that the product will be phased out immediately rather than dropped:

"Once we take a decision to discontinue a model it moves into a management assessment and it will generally be a question of fixing a date. Marketing will say, we must give our customer X weeks' notice and we'll accept that as correct...".

Managing Director C1

"We generally phase out over a period of time, which is governed by the customer and if there's a substitute on the market".

Sales and Marketing Director D2

The factors that impinge upon "fixing a date" are examined in paragraph 6.7.4. With the "phase out immediately" option, a date is indeed fixed, which is not always the case with the third implementation option, namely "run out".

6.7.2.3 Run Out

In early normative writing on the implementation of an elimination decision, a run out strategy implied changing the product's marketing strategy until it is deleted, in order to maximise profits (Talley 1964, Weller 1969). More recently, however,

Avlonitis (1983) found that companies in the engineering sector can and do run out a product without significantly altering its market strategy. In the current study, a run out strategy was used with and without an alteration to a product's marketing strategy:

"We maintained it at a very low level - typical, classic Boston Consulting Group - milk it and leave it there. No investment, no advertising, nothing. We put a good price on it and just let it sit there".

Marketing Director E1

Company A4, large manufacturers of confectionery, described how outlying sizes and versions of a declining product would go, then the price would be raised; this has been related in another context (see paragraph 6.5.6.15). In short, the product's price was raised and an improvement in sales volume ensued.

The respondent added that the improvement in sales was likely to be only a temporary fluctuation, and the downward sales trend was expected to continue. Both he and the Marketing Director of Company E1 were aware of the final effect of raising the price of the product: a more speedy demise.

Further reasons for adopting a run out strategy include keeping a presence in the market while a new product was being developed; allowing wholesalers or retailers to run down their stocks of a deletion candidate or to allow customers to find alternative sources of supply. These issues are dealt with more fully in paragraph 6.7.4.

6.7.2.4 Sell Out

Only two companies mentioned the option of selling out, which for Company E2 meant selling finished stock to a dealer in one batch, foregoing the better margins derived from selling direct to the end user:

"When we decided to stop we had got into a situation where work in progress was 20 machines. We sold the lot to our dealer in Northern Ireland, both machines and components, at a very low price".

Marketing Director E2

A similar strategy was adopted by Company B3, although it is a slightly special example, since the manufacture of some elimination candidates was switched to another of the international parent group's subsidiaries.

6.7.2.5 Re-introduce as a "Special"

The fifth and final implementation strategy was first described by Avlonitis (1983). In the current study, only one company mentioned dropping the product from the standard range and reintroducing it as a special. Reintroduction of the product as a "special" involved charging a premium price.

"There's one group of products called flex flight. There's 20 types of it and that was a standard range in our catalogue. In our literature we now promulgate 8 - 50, in effect we've dropped 12, but if anyone wants one of these we'll make it".

Sales and Marketing Director D3

However, a second company did use a variation of this theme. Company D6 manufactures car components, both as an OEM, and for the aftermarket. For the aftermarket, if a particular component is no longer held in stock, they will manufacture it, provided the customer can wait and will pay for a minimum batch quantity. This option is very much related to the first, only the conditions of supply differ.

6.7.3. The Implementation Strategies - Some Observations

While the current study has not shed light on any new strategies for deletion, it does confirm earlier empirical research findings and it clarifies some of their apparent discrepancies. Avlonitis (1983) contrasts his findings with those of Rothe (1971) and Eckles (1970), both of whom indicated that "drop immediately" was the

preferred implementation strategy. In the engineering sector Avlonitis did not find this to be a viable option and he forwards explanations which are based on the operating differences between consumer and industrial goods companies. Specifically, the differences are in the provision of spare parts, the existence of substitutes on the market and amounts of investment costs.

Based on findings of the current research, (See Table 6.7.1) it is fair to say that "drop immediately" is only an option for consumer goods companies in the sample, with the rider that by no means was it their preferred method. Indeed, of the 50 specific eliminations studied, only 8 were dropped immediately. The most frequently-cited option was "phase out immediately" across all industry categories, while the run-out option was more frequently mentioned in industries C, D, and E (industrial companies). This would suggest that where spare parts need to be provided, or where fewer substitute products exist or where the unit value of and investment in a product is very high, the deletion time is longer.

Having looked at the number of ways to implement a deletion decision, attention is now turned to the major factors which influence the choice.

6.7.4. Implementation Factors

Implementation factors and strategies are so interrelated that it is difficult to deal with them separately. Indeed, it was suggested that one of the major differences between "drop immediately" and "phase out immediately" is really a question of the amount of stock on hand. The factors are presented in Table 6.7.2.

Table 6.7.2 Implementation Factors In the Sample Companies

		TOTAL
Stock on hand	A2 A1 A3 A6 A5 A4 C7 C1 C2 D2 A7 B1 B2 B3 C6 C4 C3 C5 E1 E2 E6 E5 D7 D6 D4 D1 E3	27
Residual demand	B2 C4 D6 C6 C8 E3 D2 D7 E4 D5	9
Effect on middlemen/ customers	A7 B1 B2 B3 C6 C4 D6 E6 D2 D3 E4 E5 D5 D1 A1 A3 C1 C2 C5	19
Availability of a new product	C1 C8 C2 B2 C4 C3 C5 A3 A5 E1 E2 E6 D3 D5 E4	15
Seasonal issues	A2 A3 A4 C7 C8	5
Salvage value of machinery/equipment	A3 A5 D5 E3 B1 D6 C6	6
Status of replacement parts	C3 E1 E2 E6 D2 E4 C1 C2 D7 D4 D5 E3 B3 C4	14
Time required to shift resources	A5 D5 A3 C2 B2	5

6.7.4.1 Stock on Hand

Although a company may decide to drop a product, this does not mean that no stocks exist. Indeed, from Table 6.7.2 it can be seen that stocks are the major preoccupation of respondents. Stocks refer to raw materials, parts or ingredients as well as finished products:

"The first thing you do is establish the amount of stock you've got in production, and, usually, with ranges that aren't selling, there's a lot of finished stock... We may decide to come out of something, but with the stock, we'll still have it for six to nine months".

Marketing Manager C6

The effect of raw material stock, however, is of less importance. Where raw material stocks are interchangeable, they can be transferred to another product, or to the (new) replacement product:

"Our raw material/part stock never is very complicated because there's such a high degree of common parts. We normally phase out/phase in quite quickly once the new product is ready and don't further prolong the life of the old one. It's only kept on until we get the new one on stream".

Marketing Director C4

In dealing with stocks of raw materials, parts or ingredients, two options exist. Either management resolves to make more of the product to use up inventory, or it has to write it off. Where stocks were an issue, respondents had clear ideas about how they should be tackled:

"Generally, when we decide to drop and when we drop is separated by the time it takes to use up the stock. Up to a certain figure a product manager can write off stock. If he wants to write off more, then it goes to a higher level".

Marketing Director A4

"I'll raise a discontinuation on the models in question and manufacturing will break down all the parts needed to build that clock: dials, hands, bezels, labels etc. The total cost is £244. Then I decide to kill the model or increase the stock of finished products by building the number of dials they have into clocks. If I do that, I have to evaluate the cost of building the clocks and what I think I'll sell them at, against the £244".

Product Manager C2

Three companies (A4, C6, D6), explained that the different types of stock that went into a product range rarely sold at the same rate, and that inevitably write-offs would occur. This was a fact they had grown to live with, although every effort was made to minimise the effects.

Where finished stocks were available, these could, after a certain date, be sold off in a final promotion. One respondent made the important proviso that selling off a discontinued product could affect the sales of the replacement, or any other product in the range:

"If we've got an 'end' of a line we'll get a salesman to push it at a special price and that takes care of the stock of finished goods. But with price cuts you've got to be sure you're not jeopardising sales of your most profitable lines".

Product Manager C2

6.7.4.2 Residual Demand

Ten companies mentioned this factor as an influence on the timing of a deletion. Where it was a consideration, an elimination would be postponed so that a certain amount of product could be produced for important customers still requiring it:

"The time can be anything from six months to a year - the last one was about nine months. We'll tell the customers what we're doing, and get their views. Then we'll give a date for last orders and have a date for no further production after that".

Sales and Marketing Director D2

"Factors affecting the time scale used have to be fairly pragmatic. Stock levels, for example, stock in the pipeline, and how much [stock] is needed in the field".

Product Manager B2

"We're also prone, in this business, to receiving advance orders and this upsets the timing of a product we want to drop. We have to plan production, buy stock etc., to honour those orders".

Marketing Director C4 .

"Customer requirements. We often have to work that out for them if they're not sure. We know what we've been supplying them, how old their vehicles are and how great replacement demand is".

Marketing Director D5

Respondents indicated that where a product was to be replaced, they hoped to take care of residual demand with the new product.

6.7.4.3 The Effect of the Elimination on Middlemen and Customers

While the potential nuisances caused to middlemen and customers would be reviewed at the evaluation stage, minimising the nuisance had to be handled at the implementation stage, which affected the timing. At the most extreme, this can involve indeterminately deferring the deletion until agreement can be reached:

"One of our products, the $\frac{3}{4}$ lb pack of sausages, has been difficult to drop because of a customer whose persistence has caused most, if not all, the delay".

Marketing Director A1

"Two years ago we decided to take a product out of the range, so we contacted key customers, one being British Telecom, who said they really needed it and that it was very important in our relationship. As they were a very large company I took the attitude to keep it in the range".

Marketing Director B3

"The only way to really do it, is to work with the customer. The thought of saying 'We're stopping' is pretty bad for customer relations and we depend on them".

Marketing Director B1

However, in most cases customers and middlemen would receive notice of the company's intention to eliminate the range.

"We believe in telling everyone through their local sales engineer personally. It helps the implementation, rather than a 'diktat' from the centre".

Marketing Director B3

"We tell the customer in advance of the discontinuation and ask them for documentary evidence of their requirement to balance the stocks and we put their orders through".

Marketing Manager C5

There was no general agreement on when customers/middlemen should be notified. Some respondents held the view that to let people know the company intentions would have an adverse affect on sales of the product. Others distinguished between large and small customers, while others still believed that telling customers in advance was akin to provoking an argument:

"We don't consult customers before we make the final decision, as it is like a deathwish on the range, but we do inform them after the decision has been taken and after we've sorted out our run-down problems".

Managing Director C1

"We eliminated a series of knives and irons for woodworking tools about five years ago. I'm sure we didn't contact any of our customers because we didn't want to alert them to a problem or they would have deserted us in droves".

Sales and Marketing Director E5

"We'd only notify if we had a superior product in mind, available in stock. You don't provoke that sort of fight with customers. You daren't in case he becomes aggressive because he thinks he should have been consulted before you stopped it".

Marketing Director E2

Of the 12 companies that did not mention the effect of the elimination on customers and middlemen, 4 were concerned about "residual demand". Clearly, although not mentioning customers generally, in the specific instance of holdover (residual) demand, they were, in fact, catering for customers needs. Six of the remaining companies were consumer goods companies whose trading customers appeared, on the whole, to welcome deletions, for the shelf space reasons explained earlier.

6.7.4.4. The Availability of a New Product

Where companies planned to replace the deletion candidate with a new product, the availability of the new product and the timing of its launch were instrumental to the deletion schedule:

"Timing is influenced, along with those issues [stock], by the production of the new one. We'll slowly phase out until production starts on the new one, then it goes immediately - although some of the trade may still have it. That's when we give 10 per cent off, so they can put that on and help it go".

Marketing Manager C5

Thirteen companies mentioned the "availability of a new product" as being of major concern when scheduling withdrawal of products. The timetabling of the new product launch would itself be influenced by the stock availability of the old one:

"We have to plan it carefully - it's a written procedure for deciding how much stock we'll be writing off; what replacement parts and dates are; what discounting will be done at retail level to get rid of final stocks".

Managing Director C1

None of the 15 companies appeared to allow a "gap" between the old and new product to occur, and the Product Manager in Company E6 explained that:

"We'd never drop and leave a gap in the market. A new product rarely comes on stream immediately and we have to overcome the resistance to new products".

One method of overcoming resistance to new products involved a change in pricing strategy, to make the new product compare attractively with the old.

There appears, therefore, to be two distinct changes in pricing strategy associated with the phase in/phase out operation. The first is a decrease in the price of the old product, to empty

warehouses and the distribution chain of finished goods. This was used where it was felt necessary not to have both old and new products on the market simultaneously. The second is an increase in price, not only to profit from the declining product where people insisted on buying it, but also to help the launch of the new product through diminishing the price difference.

6.7.4.5 Seasonality

Where products are subject to seasonal fluctuations in volume, it was found to be easier to eliminate during the low-volume season. Four companies mentioned seasonality as an important implementation factor. For example, Company A3, manufacturers of instant food and drink, had eliminated a line of instant tea during the summer, as "tea is more easily disposed of in the summer".

Alternatively, companies may wait for a commercial "event" which makes it easier to drop the product in question, the publication of a new price list, for example. The Marketing Director of Company A2 would routinely wait until a new price list was to be printed before deleting a line. In a similar vein, the Managing Director of a large company manufacturing carpets made the point that:

"When we are replacing products which are promoted by retail groups, we try to get them changed well before or well after the January or June sales so that we can't find they've got themselves committed to showing the product in the sales".

Managing Director C7

It should be mentioned, however, that seasonality factors also influenced the timing of the introduction of a new or replacement product and, thereby, the deletion also.

6.7.4.6 The Salvage Value of Machinery and Equipment

Disposing of plant and machinery as painlessly as possible, either by selling or re-using it, is a major consideration which impinged upon the scheduling of a withdrawal:

"A lot will depend on stock of ingredients, packaging materials and what we intend to do with the plant after we've stopped. Do we get rid of it, or do we put something else onto it?".

Commercial Director A5

"Once you've decided to drop it, it won't be tomorrow. There are still such factors as how much lease you've got left on the building; is it your own and how can you sell it ...?".

General Manager C6

This factor was important to companies that had, through shedding a product-line, shed an entire manufacturing unit as well. Of the seven companies citing this as an implementation factor, two had shut down factories.

6.7.4.7 Time Required to Shift Resources

This implementation factor differs from the previous one in that a decision has been taken to reallocate certain resources and the time delay merely represents the logistics of the changeover. This factor was cited by five companies and tended to be mentioned as one factor on the list:

"Customers have to be told; labour also. Plans to meet [customer] requirements have to be drawn up, along with plans for space and machine utilisation".

Managing Director D5

6.7.4.8 The Status of Replacement Parts

Fourteen of the companies claimed that the manufacture of components for future service and replacements was an influence on the timing of a deletion. Estimating future replacement demand was handled in

two ways: asking customers about their likely future requirements and historical service and breakdown reports. Most companies citing this factor had a "parts policy", where they guaranteed to provide for a number of years after the discontinuation:

"We undertake to supply parts up to five years after selling the last machine. After that time we'll try to encourage them to replace their equipment by gradually increasing service charges".

Marketing Director B3

"We have to keep some spare parts and this affects the final run. Our policy is to have two runs of parts, but in practice most are drawn off immediately after delivery, due to transit damage".

Managing Director C1

"We do have to run down the product, as we keep a stock of some parts. So we'd stop after the next scheduled build".

Managing Director D4

Finally, it is interesting to muse over the entire implementation process which combines the factors and strategies, to see how the sample companies arrive at their choice of implementation (See Table 6.7.3).

Table 6.7.3 Written Guides for Implementation

No Plan	A1; A2; A6; D2; D3; D4; C8; D7.	8
Checklist or memo	B1; C4; A4; C6; C3.	5
Plan or timetable	A7; A3; B2; B3; C1; C2; C7; E5; C5; A5; D5; D6; E1; E2; E3; E6; E4; D1.	18

Half of the sample companies constructed a plan to guide them through the pitfalls of dropping the product. In some cases, such plans were quite extensive, with the rationale for the deletion committed to paper:

"...When the crunch comes there is a document produced - which is a standard document used in the company - called an action plan, which lays out all the facts for people who are going to have to implement the decision. It has a timescale attached to it, a bit of background, what we're trying to achieve, why we're doing it".

Commercial Director A5

Already cited is the Marketing Director of Company B3 describing the bar chart they use (see paragraph 6.7.2.2).

Where a plan was developed, respondents indicated it was a good way to control finance, write offs and handle customers. Notably, all the companies manufacturing capital equipment used a plan, which is not surprising if one considers the complexity of Avlonitis' model of implementing an elimination decision, built up from the testimonies of respondents in engineering industry (Baker 1985a).

A further five companies claimed to use a brief checklist process, although Company C3, manufacturers of domestic appliances, said that even these were only used where a product was being replaced and referred more to events concerned with the introduction of the new product than the deletion of the old. Specific detail of the checklists varied among the four remaining companies, one company's checklist being almost as comprehensive as full plans, although the respondent insisted it was not a plan:

"We had a checklist. You're talking of a major closure of a unit - you've got to inform local MPs, Trade Unions, so you need to know who's going to telephone whom, who's doing this and that...".

Marketing Director B1

On the other hand, Company A4 used a "distributive note" which was, quite literally, a note to inform distribution channels of the product's deletion. Similarly, the Marketing Director of a company manufacturing gas heaters uses the following disclaimer:

"I suppose we do plan - the product planning committee makes it up, but the word plan is really rather misleading - its just a short memo really".

Marketing Director C4

A further eight companies do not prepare any written material to guide the final withdrawal. Mostly these companies are small, with highly flexible manufacturing lines which eclipses the need for extensive plans:

"We know what considerations are necessary before dropping. We won't write off stock for the sake of a few more runs. We don't need a plan of action either. We decide to stop, tell major accounts, tell salesmen, and stop".

Marketing Director A1

One company, however, manufacturers of edge connectors (Company D7), has so little control over the implementation of withdrawals that they are usually left uncompleted. Speaking of one withdrawal, for which no plan was developed, the product manager says:

"Only half the elimination has been done - we haven't cleared its vestiges out of the system, stock hasn't been cleared up, its lying in stores, two of our distributors have not yet been informed".

Product Manager D7

Clearly, the situation described in the above quote is an extreme one, since the fiasco was not generally present in companies that did not plan the phase out. The account does, however, serve as a salutary warning of what may occur if the withdrawal is not thought out thoroughly.

In contrast to previous stages in the decision, where virtually no written guidelines are used, the implementation stage stands out as being structured and ordered in most cases. While the author is aware of the danger of making a virtue out of a necessity, such a change in procedure is reminiscent of the "mechanistic shift" observed during the new product development process by Johnes (1985).

6.7.5. The Implementation Factors - Some Observations

As previously stated, the implementation stage is the least-well documented of all the stages in the elimination process. This said, more has been written about the "factors" that the strategies. Going back as far as 1964/1965, the need for considering "the status of replacement parts", "stock" and "holdover (residual) demand" was identified. (Alexander 1964 Kotler 1965). More recently, research studies have uncovered the breadth of factors which impinge upon the choice of implementation strategy. More specifically, Avlonitis (1983) found that "holdover (residual) demand", "stock on hand", "replacement parts", "effect on middlemen/customers" and "replacement product development" affected the timing of the decision. A more incidental factor was the "problem situation" that had initially triggered the elimination decision, although this was not specifically examined. Gauthier (1985) adds the dimension of "seasonality" to this list, while the current study adds two more empirically-based findings: "the salvage value of machinery and equipment" and "the time required to shift resources".

The nature of the implementation factors that prevailed seemed in some cases to vary, depending on the industry. The status of replacement parts was not considered by any companies in category A, fast-moving consumer goods, since, as might well be expected, the need to hold replacement stock does not exist. "Residual demand" was again of less concern to FMCG companies, as was "new product availability". These findings are commensurate with the

preferred mode of implementation found in these companies, namely drop or phase out immediately. With comparatively few factors to consider, FMCG companies are better placed to withdraw quickly.

On the other hand seasonal issues were mentioned by three FMCG companies and one company in category C (consumer durables) which may imply that industrial goods companies are less subject to seasonal fluctuations.

6.7.6. The Effect of the Precipitating Circumstances on the Implementation Stage

Turning to the 50 specific elimination case histories, a number of patterns are discernible. (See Table 6.7.4).

Table 6.7.4 Implementation and the Precipitating Circumstances

Precipitating circumstances (and companies assigning a specific deletion to them)	Timing, strategies and factors
Declining Market Potential	
A3	Seasonality Time required to shift resources <u>Run out strategy</u> 9 months
A6	Stock on hand <u>Run out strategy</u> 24 months
C4	Stock on hand Status of replacement parts <u>Run out strategy</u> 12 months
D2	Stock on hand <u>Effect on middlemen/customers</u> <u>Run out strategy</u> 9 months
D2	<u>Effect on middlemen/customers</u> Residual demand <u>Run out strategy</u> Phase out immediately strategy 9 months
D7	Residual demand Phase out immediately strategy 2-3 months
E1	Stock on hand Status of replacement parts <u>Run out</u> 15 months

Table 6.7.4 (cont.) Implementation and the Precipitating Circumstances

Precipitating circumstances
(and companies assigning
a specific deletion to them) Timing, strategies and factors

Declining Market Potential (cont.)

E6	<u>Effect on customers/middlemen</u> Stock on hand Phase out immediately 6 months
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Unsuccessful New Products

A1	Stock on hand <u>Phase out immediately strategy</u> 3 months
A3	New product availability <u>Phase out immediately strategy</u> 6 months
A6	Stock on hand <u>Drop immediately strategy</u> 3 months
C2	Time required to shift resources <u>Drop immediately strategy</u> 1 month
C3	Stock on hand <u>Phase out immediately strategy</u> 6-8 months
C5	Stock on hand Effect on customers <u>Drop immediately strategy</u> 3 months
C8	Seasonal issues <u>Drop immediately strategy</u> 3 months
E4	Status of replacement parts Availability of a new product Residual demand <u>Phase out immediately strategy</u> 4 months

Rationalisation

B3	<u>Stock on hand</u> Phase out immediately strategy 5 months
B3	<u>Stock on hand</u> Effect on customers/middlemen Phase out immediately strategy 6 months

Table 6.7.4 (cont.) Implementation and the Precipitating Circumstances

Precipitating circumstances (and companies assigning a specific deletion to them)		Timing, strategies and factors
Rationalisation (cont.)		
C6		<u>Stock on hand</u> Residual demand Phase out immediately strategy 3-4 months
D6		<u>Stock on hand</u> Phase out immediately strategy 4 months
New product development		
A2		Seasonal issues Drop immediately strategy 1 month
A5		Stock on hand Phase out immediately strategy 4 months
B2		<u>Effect on customers/middlemen</u> Time required to shift resources New product availability Stock on hand Phase out immediately strategy 6 months
C5		<u>Effect on customers/middlemen</u> Stock on hand New product availability Run out strategy 12 months
D7		Stock on hand Residual demand Incomplete implementation at the time of the study

Those products dropped due to a declining market potential were generally harvested or phased out slowly, with an average period of 9 months between taking the final decision and stopping production. On the other hand, six of the eight unsuccessful new products were deleted within four months of the final decision, while those products suffering from declining sales and profits were eliminated immediately.

With regard to the implementation factors, concern about stock levels was expressed in all four cases where elimination took place as part of a rationalisation policy.

The relationship with customers was considered to be important where a product was being deleted due to a declining market potential (three cases) or because a new product (2 cases) was being introduced.

Although patterns such as these can be recognised, we are not in a position to make more than tentative observations. As we have already pointed out the method of deletion is very much dependent on the implementation factors which themselves may have little to do with the precipitating circumstances. By way of illustration, concern with the status of replacement parts is as much a function of the type of product as it is a function of the set of circumstances surrounding the product.

6.7.7. Summary

This section has presented five alternative strategies for implementing a decision to eliminate, together with eight factors which managers said influence their choice of strategy. Both the strategies and factors appeared to be associated with the precipitating circumstances triggering the elimination, although the associations observed are speculative.

About half of the sample companies constructed a plan to guide the implementation of the deletion, although plans varied considerably in their detail and complexity.

Section 6.8 Recapitulation and Conclusion

6.8.1 Introduction

As outlined in Chapter 4 (paragraph 4.5.2), the research was designed so that variables relevant to "the research problem" could be defined during the interview survey, and so that observation of patterns of behaviour could be made. The complementary aim of the mail survey stage was to quantify and interrelate the variables and observed patterns of behaviour. It is therefore apposite to summarise the observations made during the interview phase of the study, with a view to detailing the specific issues addressed by the mail survey. At this stage, the term "hypothesis" has been avoided because it would lead to undue detail and length for a summary section (approximately 108 hypotheses to detail the differences in behaviour among industries). This said, in order to address these specific issues, it was necessary to formulate the appropriate null and alternative hypothesis so that statistical models could be used. They are not, however, committed to paper.

Each of the seven sections reporting the interviews is summarised below, together with an outline of the research issues generated.

6.8.2 Strategic Planning

Section 6.1 described the nature of strategic plans in the sample companies; their length, degree of detail, and issues relevant to their development. Due to the size of the sample, interpreting differences in this strategic behaviour among industries and sizes was not possible.

Certain strategic issues seemed to be associated and were regrouped judgementslly into three categories: growth issues, finance issues and marketing issues. Each of the groups of issues, where they were emphasised by companies, seemed to have some influence on the type and number of deletions occurring in that company. This, however, is a speculative deduction.

Finally, the 50 case histories showed that in certain instances, product elimination is considered to be part of overall product-market strategy, and not just a response to a crisis.

The research issues generated from these findings are:

- 1 Whether and how the nature of strategic planning varies among industries and sizes of company.
- 2 The inter-relationships which may exist among the strategic issues.
- 3 Whether and how the emphasis given to the strategic issues by companies influences the number and nature of elimination decisions.
- 4 The extent to which (if at all) eliminations occur as part of overall product-market strategy.

6.8.3 Product Planning

Section 6.2 described the nature of product planning and located the elimination decision with respect to the product planning modes.

Two broad types of planning were described by the interviewees: annual, operating planning and controlling the plans.

Two broad organisational bases for these planning activities were discovered: marketing-based planning and control and management-based planning and control.

Within this two-by-two classification, some differences were noted among industries and company size.

Product elimination was found to be integrated into annual planning in a limited number of instances and was dealt with to a greater extent within the control function.

The research issues generated by these findings are:

- 5 The variation which may exist in product planning among industries and company sizes.
- 6 Whether and how the strategic planning issues emphasised influence the types of product planning used.
- 7 Those types of elimination dealt with at the annual planning level and those dealt with under the jurisdiction of control activity.

6.8.4 Precipitating Circumstances

Section 6.3 described the factors triggering the product deletion process. These are named "precipitating circumstances" and 17 were described by the respondents. Attributing the cause of a deletion to any one of the precipitating circumstances is difficult because they often overlap and combine. A few differences among industry were apparent in the data.

Certain precipitating circumstances seemed to be associated with certain strategic planning issues.

The research issues generated by these findings are:

- 8 Whether and how the precipitating circumstances vary among different industries and company sizes.
- 9 The extent to which (if at all) the precipitating circumstances vary according to the emphasis given to the various strategic issues (see research issue 3).

6.8.5 The Identification of Product Elimination Candidates

Section 6.4 described the way in which product elimination candidates come to the attention of managers in a company. A combination of minimum standards, product goals and performance criteria are used to assess a product's worthiness in the range. The minimum standards and product goals were not as widely used as

the review criteria, of which there were 15. No differences in the review criteria were observed among industry or among company sizes, although this was largely due to the small size of the sample.

Some anecdotal evidence illustrated the potential association between the strategic issues considered by a company and the criteria they review. There appears to be some relationship between the precipitating circumstances and review criteria.

The research issues generated from these findings are:

- 10 Whether and how the recognition criteria vary among different industries and company sizes.
- 11 The extent to which (if at all) the recognition criteria are related to the strategic issues described in section 6.1.
- 12 The extent to which (if at all) the recognition criteria are related to the precipitating circumstances described in section 6.3.

6.8.6 The Analysis and Revitalisation of Product Elimination Candidates

Section 6.5 explained the way in which the sample companies analysed and revitalised deletion candidates. The analyses were often informal and varied in depth according to the product's circumstances. A total of 16 issues that can be examined to provide information about the product were described by respondents.

The analysis, which was reserved for products whose performance was unsatisfactory, varied according to the nature of its problems. No differences were detected among industries or company size and there was no hint of an association between the strategic planning and analysis issues. It is felt that the way in which the

decision proceeds after an elimination candidate has been identified is strongly related to factors specific to the circumstances of the product at the time.

Similarly, choice of the method of revitalisation (of which there were 18) appeared to be dependent on what was wrong with the product.

These findings suggest the following research issues:

- 13 The difference in the methods of revitalisation (if any) among industries or company sizes.
- 14 Whether and how the methods of revitalisation are related to the precipitating circumstances described in section 6.3.

6.8.7 The Evaluation of Product Elimination Candidates

Section 6.6 examined the nodal point of the decision, where the final "stop-go" choice is made. 19 "evaluation factors" were described by respondents as being of concern to the final decision. These factors were judgementally categorised into two groups: internal factors and external factors. While little difference was observed among industries and company sizes in the importance of these 19 factors, the precipitating circumstances, along with some other product specific factors, appeared to exert some influence. The product-specific factors included the importance of the product in the range, how much capital was invested in it and whether or not it would be replaced.

These findings generated the following research issues:

- 15 The difference (if any) in the evaluation factors considered among industry and company sizes.
- 16 Whether and how the evaluation factors are related to the precipitating circumstances described in section 6.3.

6.8.8 The Implementation of the Product Elimination

The alternative strategies for deleting products as well as the immediate factors governing their choice were examined in Section 6.7. Five implementation strategies and eight implementation factors were described by respondents. There did appear to be some differences in strategies used among industry categories. Although the use of the strategies was largely governed by the implementation factors, they both appeared to be influenced, to some extent, by the precipitating circumstances of the deletion.

Virtually no associations were observed between the strategic planning issues and the implementation strategies or factors.

These findings generated the following research issues:

- 17 Whether and how the implementation stage varies among different industries and company sizes.
- 18 The extent to which (if at all) the implementation stage is related to the strategic issues described in section 6.1.
- 19 The extent to which (if at all) the implementation stage is related to the precipitating circumstances described in section 6.3.

6.8.9 The Product-Specific Factors

The testimonies of the interview respondents highlighted the influence of a number of factors, specific to an elimination candidate, which can influence the elimination decision process. Such factors included: the amount of fixed capital invested in the product, the role played by the product in the company's competitive stance, the "level" of the product (ie. items in a range, versus a range of items).

This finding gave rise to two final research issues for the mail survey:

- 20 The effect (if any) of the strategic issues described in section 6.1 on the product-specific factors.
- 21 The effect (if any) of the product-specific variables on the content of the elimination decision-making process.

6.8.10 Summary

From the foregoing recapitulation and statement of research issues for the mail survey, it is possible to specify the framework of analysis required by the mail survey. Firstly, company behaviour needs to be analysed for differences among industries and sizes. Secondly, the behaviour of companies when reviewing, analysing and revitalising, evaluating and dropping products needs to be analysed to see if any patterns emerge in relation to strategic issues. The precipitating circumstances and other product-specific factors need to be analysed for patterns relating to strategic issues. And finally the behaviour of companies in analysing and revitalising, evaluating and dropping products needs to be analysed for differences according to the specifics of a product's circumstances.

CHAPTER 6

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CHAPTER 7

Presentation of the Mail Survey Findings

7. Presentation of the Mail Survey Findings

7.1 Introduction

The purpose of this chapter is to present the findings of the mail survey.

The mail survey was carried out to test some of the hypotheses generated by the interviews. As explained in chapter 4, which deals with research methodology, the mail survey questionnaire solicited data on product elimination decision behaviour at two levels: at the level of the company and at the level of the product. (See Chapter 4, paragraph 4.5.2.1). Consequently, the presentation of the mail survey findings will follow the pattern set out in the questionnaire. Product elimination behaviour at the company level will be described first, then product elimination behaviour specific to one product, chosen by the respondent, will be explained.

The chapter is divided into eight sections. The first four sections deal with elimination at the company level, covering strategic planning, product planning, recognition factors and implementation strategies and factors. The last four sections deal with product elimination behaviour at the product level, including precipitating circumstances, corrective action, evaluation factors and implementation and timing.

7.2 Strategic Planning

To gain a picture of the sample companies' strategic vision, respondents were asked if they carried out strategic planning, the length of time covered by the plan, the issues relevant to the plan, and the major strategies pursued. Of the 166 respondents to the mail survey, 137 (82.5 per cent) claimed to engage in long-term planning, which was defined as catering for the period beyond the immediate 12 to 18 months.

Tables 7.1 and 7.2 show the number of companies carrying out strategic planning and give a breakdown of these by industry and company size. The X^2 statistic was used to test for any significant differences.

Table 7.1 Strategic Planning in Industry Categories

Industry	% of Companies in Industries				
	A	B	C	D	E
% Companies with Strategic Plans	91	79	69	89	85
% Companies without Strategic Plans	9	21	31	11	15

n = 137 Not Significant (NS)

Table 7.2 Strategic Planning in Companies of Different Sizes

	% of		
	Small Companies	Medium Companies	Large Companies
Companies with Strategic Plans	71	92	95
Companies without Strategic Plans	29	8	5

n = 137 Significant at the 1 per cent level

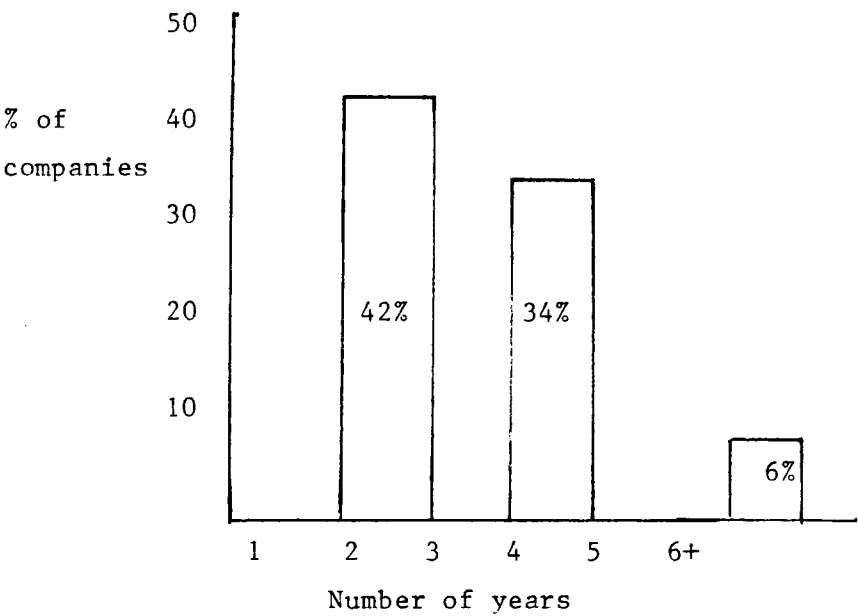
Although differences among industry categories are not significant, clearly, industry A (Fast-moving consumer goods) where more "blue chip" companies operate, shows the highest percentage of companies carrying out strategic planning.

With respect to company size, more of the larger and medium-sized companies carry out strategic planning ($X^2 = 14.6$; $df = 2$; $p = .0007$).

Findings such as these do not vary from expectation, and can serve to confirm the robustness of the data.

Figure 7.1 shows that the most popular time span for strategic plans is between 2 and 3 years.

Figure 7.1 The Time Horizon of Strategic Plans



n = 137

Tables 7.3 and 7.4 give the strategic horizon according to industry and size.

Table 7.3 Strategic Horizon in Industry Categories

Industry No. of Years	% of Companies in Industries				
	A	B	C	D	E
2-3	41	41	36	57	35
4-5	44	34	22	31	41
> 5	6	3	11	-	8

n = 137 Not Significant (NS)

Table 7.4 Strategic Horizon by Company Size

No. of Years	% of		
	Small Companies	Medium Companies	Large Companies
2-3	44	37	43
4-5	25	50	38
> 5	2	5	14

n = 137 NS (2 out of 12 cells with expected frequencies of less than 5).

Tables 7.3 and 7.4 show that the length of time covered by strategic plans does not vary greatly by industry, but that, once again, size may be a determining factor.

The 10 issues generated at the interview stage were rated by the mail survey respondents on a five-point scale, where a rating of 1 indicated little or no relevance and a rating of 5 indicated extreme relevance. This enabled the researcher to compare the relevance of each issue to strategic planning in the sample companies. Table 7.5 shows the resulting mean scores.

Table 7.5 Comparative Relevance of Strategic Issues

Strategic Issue	Mean Score*	Standard Deviations
Definition of the company's product-market	4.4	0.8
New product development	4.3	0.8
Future sales volume	4.1	0.8
Return on investment	4.0	0.9
Cash flow/liquidity	3.9	1.0
Forecasts of market size and market share	3.9	0.9
Long-term investment	3.7	0.9
Company image/reputation	3.5	1.0
Forecasts of technological change	3.3	0.9
Mergers and acquisitions	2.6	1.2

* Measured on a five point scale where: 1 = not at all relevant, 5 = extremely relevant.

The company's direction in terms of its product-markets, its intended new products and return on investment appear to be of greatest importance. Only one issue scored a mean of less than 3 (the mid-point) namely, mergers and acquisitions. While this issue is of great importance to a company when it arises, it is not generally relevant to many companies at any one point in time.

In order to investigate differences in the relevance of strategic issues according to industry, the Kruskal-Wallis one-way analysis of variance test was performed, since the distribution did not conform to the "normal" curve. No significant differences were detected. Using the same test to check for differences according to company size, two significant results emerge (See Table 7.6).

Table 7.6 Differences in Relevance of Strategic Issues According to Company Size

Strategic Issue	Mean Rank* of Companies in each size category			
	Small	Medium	Large	Sign.
Return on Investment	60.1	78.2	73.6	10%
Forecasts of market share	59.2	75.4	77.7	5%

*The mean rank is the average ranking of the raw scores for each variable in the subsample. A fuller discussion is given in Chapter 5.

Unsurprisingly, the larger the company the greater the relevance of return on investment and forecasts of market share.

Of greater interest than the differences in relevance of the strategic issues according to industry or size were the underlying relationships among the strategic issues.

The ideal way of examining this would have been through a principal components analysis. Unfortunately, examination of the highly-skewed frequency distribution and the high significance of the Kolmogorov-Smirnov test required a conservative attitude regarding the population distributions and the quality of measurement. As principal component analysis, a parametric statistical procedure, based on Pearson's product-moment coefficients, requires interval-level measurement and a normally-distributed population that could not be claimed confidently for this particular dataset, relationships among the strategic variables were examined by means of a correlation matrix based on Spearman's rho (see Appendix 8).

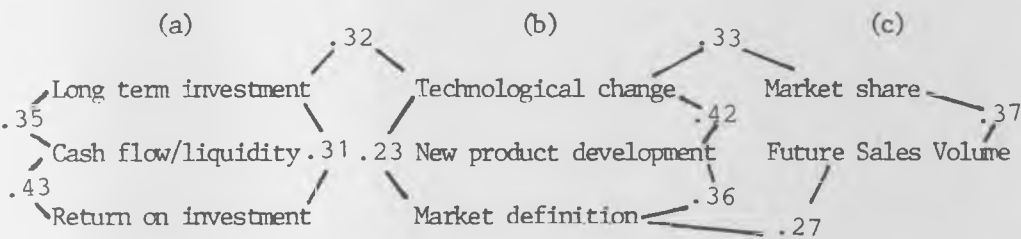
As the correlation matrix shows, there is a great deal of inter-correlation among the strategic variables, which is not surprising. The interview findings showed the extent to which the variables impinged upon one another. Further, it is logical to associate a number of these variables.

The highest ($r_s > .23$) and the most significant ($P < .001$) correlation coefficients can be arranged in relation to the three-group classification of strategic issues developed during the interview stage, (see Table 7.7) to help understand the stronger interrelationships.

Table 7.7 Comparison of The Strategic Interrelationships Found During the Interviews, With Those In The Mail Survey Data

Interview Categorisation		
<u>Finance-related issues</u>	<u>Growth-related issues</u>	<u>Marketing-related issues</u>
Long-term investment	Future sales volume	Definition of product-
Cash flow/liquidity	Mergers and acquisitions	markets
Return on investment	<u>NPD</u>	Market share
	Technological Change	Future sales volume

Mail survey data - highest correlations (r_s)



The first grouping (a) in the lower part of Table 7.7 is reminiscent of the interview generated "finance-related issues". The inter-correlations depicted are among those issues relating to the amount of money coming into, and being used in, the firm.

The second grouping of highly inter-correlated issues (b) includes new product development, technological change and market definition. This indicates high levels of association among issues pertaining to development and growth of the firm.

The third grouping (c) comprises forecasts of market size and share and future sales volume, traditional marketing considerations as defined in most basic marketing textbooks. In addition, definition of company product-markets is associated with future sales volume, which suggests, as might be expected, that the definition of a company's product-markets is a consideration related to marketing and growth issues. Similarly, forecasts of technological change are related to finance, marketing and growth issues. Technological change is propounded by much of the environmental scanning literature (Twiss 1984, Webb 1987) as being central to all aspects of strategic planning. These interrelationships confirm, to a large extent, the findings of the interview survey and suggest the internal consistency of the data.

A major thrust of the mail survey was to examine the effect of those strategic variables on product elimination behaviour at the company level. The first stage of this sphere of enquiry was to identify whether the number and type of eliminations varied according to the relevance of the strategic issues to a company. Respondents were asked to indicate the number of products eliminated and replaced over the past five years. It was hypothesised that the issues relevant to a company's strategic plan may affect the number and nature of elimination (and replacement) decisions.

The hypothesis was tested through the following steps:

- 1 The numbers of products (both ranges and items) dropped and replaced was expressed as a percentage of the total number of products
- 2 One-way analysis of variance was carried out to examine differences in the percentage of products dropped and replaced among industry categories and company sizes. (See Tables 7.8 and 7.9).

Table 7.8 Differences in the Percentage of Products Replaced Among Industries

Industry	Average % Products Replaced				
	A	B	C	D	E
Percentage	12	10	25	13	15

Significant at the 5 per cent level

n = 166

Table 7.9 Differences in the Percentage of Products Replaced Among Sizes

Company Size	Average % Products Replaced		
	Small	Medium	Large
Percentage	15	11	20

Significant at the 5 per cent level

While no significant differences in the number of products dropped existed among company sizes or industries, there were fluctuations with respect to the percentage of products replaced. The average percentage in Industry C, consumer durables, was 25, while companies in all other industries replaced between 10 and 15 per cent. This confirms the interview findings where a high level of replacement was described by the Directors in the consumer durables companies in the interview sample. Clearly, the short life cycles due to changing tastes and fashion trends account for the high number of replacements.

Table 7.9 shows that large companies replaced a higher percentage of products than medium and small companies.

- 3 Spearman's rank correlation coefficients were computed, and the student's t statistic used to identify significant relationships. Only three significant - but rather weak - relationships were found among the 20 coefficients, which is not much greater than could be expected to have arisen by chance. They are reported in Table 7.10.

Table 7.10 Relationships Between the percentage of Products Replaced and Strategic Issues

Strategic Issue	r_s
Future sales volume	.16 ^c
Company image	.19 ^b
New product development	.15 ^c

^b Significant at the 5 per cent level, or better (sum of both tails)

^c Significant at the 10 per cent level, or better (sum of both tails)

Of interest here is how it is not the overtly financial strategic issues which are associated with product replacement but those which embrace a wider concern of company development and growth.

A second line of inquiry into the effect of strategic issues on product elimination involved studying the effect of these issues on aspects of product-market strategy. Building on Ansoff's (1968) growth vector matrix, respondents were asked to rate the importance of 5 product-market strategies to achieving company objectives. The strategies, their mean scores and standard deviations are shown in Table 7.11.

Table 7.11 The Relative Importance of Product-Market Strategies

Strategies	Mean scores*	Standard deviations
Developing new products to satisfy existing markets	4.2	.92
Increasing sales of present products in current markets	4.1	.82
Developing new markets for existing products	3.5	1.0
Developing new products to serve new markets	3.5	1.2
Phasing out unprofitable products and markets	3.2	1.0

* Measured on a five-point scale where 5 = extremely important and 1 = not at all important.

n = 166

As three out of the five strategies had extremely skewed frequency distributions, the Kruskal-Wallis one way analysis of variance was used to test the varying importance of the strategies.

While no significant difference in the importance of the product-market strategies was detected among company size categories, there is some difference among industry categories (see Table 7.12).

Table 7.12 Importance of Product-Market Strategies among Industries

Strategy	Mean Rank Score in Each Industry				
	A	B	C	D	E
Developing new markets for existing products	72.5	91.6	69.7	87.9	96.9

Significant at the 10 per cent level.

Industry E (heavy capital equipment) scores the highest, although industry D (industrial components) and B (industrial supplies) also score highly. It seems from these findings that the industrial goods companies are keener to develop new markets for their existing products in which a great deal of capital and development costs is invested. These companies, in finding new markets for their products, are allowing themselves more time for a good return on their investment.

In order to study the impact of the strategic factors, Spearman's rank order coefficients (r_s) were calculated and their significance determined using the student's t distribution. The significant ($p > .05$) results of this analysis are shown in Table 7.13, Appendix 9 shows the entire correlation matrix.

As Table 7.13 shows, the strategies and issues are interrelated. Curiously, return on investment, the main gauge of profitability, is not associated with any of the strategies.

Market penetration is a strategy most strongly associated with those issues which, from the interview findings, were described as marketing-related issues. Long-term investment is also related to market penetration, but none of the other financial issues are.

Table 7.13 The Relationship Between Strategic Issues and Strategies

Strategic Issues	Increasing sales of present products in current markets Developing new markets for current products Phasing out unprofitable products and markets Developing new products for existing markets Developing new products to serve new markets				
Definition of the company's product-markets	.18			.22	
Long-term investment	.20	.21	.18	.21	
Future sales volume	.24				.22
Cash flow		.25			
Forecasts of market size and share				.21	.21
Mergers/ acquisitions		.22			
Company image	.26		.22	.21	.16
NPD			.21	.52	.32
Forecasts of technological change	NEG	.24		.29	.32

Market development correlates with cash flow, long-term investment mergers and acquisitions and forecasts of technological change. Clearly, developing new markets requires adequate liquid resources for investment but also may be facilitated and focused by takeovers and knowledge of technological developments.

Product-market rationalisation, as a strategy, is related to long-term investment, company image and new product development. This confirms the interview findings, where, of the thirteen eliminations that took place as part of overall product-market strategy, five were due to product development and two because the products were at variance with the companies' image.

Product development is related to four strategic issues, which shows its centrality to the execution of long-term strategy.

Diversification correlates with new product development, forecasts of technological change, forecasts of market size and share and future sales volume.

7.3 Product Planning

At the interview stage of the study, much information was collected regarding the systems and mechanisms used in product planning and control and the location of the product elimination decision in the framework provided by the systems.

As explained in Chapter 4 (section 4.5.2.1), open-ended questions were used to explore this aspect of marketing behaviour, and the ensuing difficulties of analysing open-ended questions accepted. Product planning was described as "an activity which continuously develops the optimum mix of products and formulates the appropriate marketing strategies for the company".

115 (70 per cent) of the sample companies claimed to have regular, formal meetings to discuss product planning. The names of these meetings, and the percentage of companies claiming to hold them, are given in Table 7.14.

Table 7.14 Names of Product Planning Meetings

Meetings	Percentage of companies Mentioning each
Product-market meetings	12
New product development meetings	45
Product range review meetings	11
Internal operations review meetings	11
Marketing and sales meetings	15
General business meetings	14
Price and cost reviews	3
Product planning meetings	7

Total percentage is greater than 100 as respondents gave more than one answer.

n = 165

Respondents were asked to supply details of the issues discussed at the meetings they mentioned. The issues are given in Table 7.15.

Table 7.15 Issues Discussed In Product Planning Meetings

Issues	Percentage of companies mentioning each
New product development	63
Range policy	11
Product performance monitoring	16
Market analysis	31
Marketing mix planning	4
Internal activities	16
Cost reviews	32
Pricing strategy	26
Competitive activity	7
Product improvements	14

Total percentage is greater than 100 as some respondents gave more than one answer.

n = 160

The two tables show that, for the sample companies, product planning is most often associated with new product development, although other meetings and issues come to mind.

A cautionary note is apposite at this point: as the questions were open-ended, the percentages given are a very crude estimation of the relative frequency with which such meetings are held and issues discussed. This is one of the drawbacks of this type of question.

In order to evaluate whether any differences in behaviour existed among industries or company sizes two way tables were prepared. However, as some of the meetings and issues were mentioned by relatively few companies, they were excluded from this analysis because they would result in expected cell frequencies of less than 5. This distorts the results. Consequently, analysis of the differences by industry and size is restricted to whether or not the company has regular, formal meetings to carry out product planning, whether or not they have new product development meetings, whether or not an analysis of the market is carried out and whether or not new product development is discussed.

Among industries the only significant difference is in whether or not regular formal meetings take place to discuss product planning.

Table 7.16 Differences in Product Planning Meetings among Industries

Meeting	Percentage of Companies in Industries				
	A	B	C	D	E
Regular, formal meetings	72	64	86	54	71

Significant at the 10 per cent level

More consumer durable companies have these meetings than the other industries, and only half the industrial components companies have them.

Among company size categories, as might be expected, the larger the company, the more regular, formal meetings take place, the more new product development meetings take place and the more new product development issues are discussed. (See Table 7.17).

Table 7.17 Differences in Product Planning Meetings and Issues among Company Sizes

Meetings/Issues	Percentage of			Sign.
	Small Companies	Medium Companies	Large Companies	
Regular, formal meetings	60	75	85	1%
New product development meetings	29	60	63	1%
New product development issues	51	70	82	1%

Although not statistically significant, it is nonetheless conceptually significant that 18 per cent of small companies carry out regular planning through general business meetings while 15 per cent medium-sized and 5 per cent of large companies use this forum.

Taking those meetings and issues that were mentioned by at least one third of the respondents, it was possible to investigate the effect of the strategic issue on product planning. In doing this, the researcher is placing the measurement into the category of the dichotomy: "a variable with only two possible categories or values" (Nie et al 1975, p.5). Since there is only one interval, which is equal to itself, a dichotomy may be treated as an interval level of measurement. Results are given in Table 7.18.

Table 7.18 The Effect of the Strategic Issues on Aspects of Product Planning

Strategic Factors	Product Planning Meetings & Issues			
	Regular, formal meetings	NPD meetings	NPD issues	Market Analysis
Definition of company's product-market	.12	.03	.18 ^b	.08
Company image	.17 ^b	.07	.21 ^b	.01
New product development	.23 ^a	.23 ^a	.21 ^a	.18 ^b
Forecasts of technological change	.22 ^a	.15	.16	.07

a Significant at the 1 per cent level, or better (sum of both tails)

b Significant at the 5 per cent level, or better (sum of both tails)

As Table 7.18 shows, the planning meetings and issues are most strongly associated with new product development, forecasts of technological change, definition of company product-markets and company image. These strategic issues seem to describe concern for the company's future in terms of markets and products.

From this information we can infer that the orientation for market-based growth and development is evidenced by mechanisms for encouraging product planning and new product development. Further, it is possible to hypothesise that a greater use of product planning and development forums may result in a greater number of products being replaced. Such a hypothesis is supported by the evidence given in Table 7.13, where new product development and company image are associated with "phasing out unprofitable products and markets". Further corroboration is supplied by Table 7.10, which shows that the number of products replaced is positively correlated with company image and new product development. The additional information generated by the enquiry into product planning mechanisms and issues, is that the amount of product planning and new product development is also linked to the association between strategic issues and the numbers of products replaced.

7.4 The Recognition of Product Elimination Candidates

The third aspect of behaviour examined at the company level was the factors or criteria used by companies to identify candidates for deletion. The relative importance of the 15 recognition criteria derived from the interview survey was gauged by having respondents rate the importance of each one on a 5-point scale. (Table 7.19).

Table 7.19 The Relative Importance of the Recognition Factors

Recognition Factor	Mean*	Standard Deviation
Profit margin	4.3	0.8
Future sales	4.0	0.8
Customer acceptance	3.9	1.0
Past sales volume	3.7	1.0
Sales versus resources utilised	3.4	1.0
Activities of competitors	3.4	1.1
Price trends	3.2	1.0
Market growth rate	3.2	1.1
Actual versus projected production loading	3.0	1.0
Stock levels	3.0	1.1
Operational problems	3.0	1.2
Product's share of the company's sales	2.9	1.1
Product's position on PLC curve	2.8	1.1
Time required to meet demand (service levels)	2.7	1.1
Market share	2.6	1.1

* Measured on a 5-point scale where 5 = extremely important and 1 = not at all important.

n = 166

Future sales and profit margin were the most important criteria, whereas a product's market share, or its share of the company's total sales were least important. The low importance of market share may well be due to the high number of small companies that did not rate market share highly as a strategic issue.

Table 7.20 shows the differences among industry category detected using Kruskal-Wallis one way analysis of variance. This test does not assume normal population distributions.

Table 7.20 Differences Among Industries In the Importance of Recognition Criteria

Recognition Factor	Mean Rank for Industry Categories					Sign.
	A	B	C	D	E	
Sales versus resources utilised	71.4	105.6	69.5	85.6	78.9	1%
Operational problems	62.2	80.7	81.4	79.6	95.1	10%
Customer acceptance	85.2	67.6	93.7	70.8	92.0	5%

Customer acceptance is most important to industries C and E, consumer durables and capital equivalent.

If customer acceptance is an estimation of quality, this might explain its importance to those industries manufacturing relatively high unit cost goods that are expected to function reliably "in situ".

Company size is also associated with three of the recognition factors (See Table 7.21).

Table 7.21 Differences Among Company Sizes in the Importance of Recognition Criteria

Recognition Factor	Mean Rank for			Sign.
	Small Companies	Medium Companies	Large Companies	
Market growth	74.8	93.7	87.1	10%
Operational problems	69.7	84.1	99.1	1%
Market share	74.3	92.9	91.0	10%

Market share and market growth are of greatest importance to medium-sized companies, although the difference in means between medium-sized and large companies is very small. This concurs to a large extent with the work of Avlonitis (1986) who contends that the bigger the company, the greater the opportunity for carrying out market research activities. We would contend, therefore, that to be in a position to exploit information about market share and market growth demands that market research be carried out. Thus, to some extent the two studies concur. To this we might add that for medium and large-sized companies to continue growing requires addressing growing market sectors to a greater extent than small companies, given the logic of diminishing returns.

Having described the differing importance of recognition factors among industries and company size categories, attention is turned to the effect of the strategic issues on the recognition factors.

Spearman rank order correlation coefficients were computed (see Appendix 10). Those coefficients which are most significant are commented on below.

The strategic issues which are financially oriented are strongly associated with those recognition criteria which impinge upon the balance sheet (See Table 7.22a).

Table 7.22a Recognition Criteria Associated With Financial Strategic Issues

Recognition criteria	Financial Strategic Issues		
	Long-term investment	Return on investment	Cash flow
Batch sizes	.20 ^b	.18 ^b	.19 ^b
Stock levels	.26 ^a	.11	.29 ^a
Market share	.21 ^a	.16 ^c	.26 ^a

a Significant at 1 per cent level, or better (sum of both tails)

b Significant at 5 per cent level, or better (sum of both tails)

c Significant at 10 per cent level, or better (sum of both tails).

In addition to these criteria, which are related to more than one of the strategic financial issues, sales versus resources utilised is associated with cash flow only ($p < 0.05$), and price trends with long-term investment ($p < 0.05$). The high number of correlations among financial strategic issues and financial recognition criteria enhances the face and content validity of the data as well as giving a solid example of how a strategic orientation is translated at the operational level.

Similarly, the strategic marketing issues are commonly related to a number of textbook marketing recognition criteria associated with the "blue chip" marketing organisation (See Table 7.22^b).

Table 7.22b Recognition Criteria Associated With Strategic Marketing Issues

Recognition Criteria	Strategic Marketing Issues		
	Forecast of market share and size	Definition of product-markets	Future sales volume
Market share	.36 ^a	.18 ^b	.25 ^a
Market growth rate	.25 ^a	.14	.25 ^a
Profit margin	.20 ^b	.08	.18 ^b

a Significant at the 1% level, or better (sum of both tails)

b Significant at the 5% level, or better (sum of both tails)

It is noteworthy also that the strategic issue of "company image" is associated strongly with "market share" ($r_s = .3$ $p = .000$).

Equally, "market share" although achieving a fairly low mean score of 2.6 is related to seven of the ten strategic issues. Despite its low direct rating, it is an important measure of product performance when viewed from the strategic perspective. The strategic issue forecasts of "technological change" is significantly associated with nearly all the recognition criteria. If, in manufacturing industry, this issue is a mainstay of product development and growth (and our data suggest that it is) then the attention paid to it entails attention to the performance of products to ensure that growth and development is not hindered by dead wood.

These findings support the hypothesis that the recognition criteria used by companies are related to the perceived relative importance of the strategic issues. This was suggested by the interview data. Unfortunately, there is no previous work with which these findings may be compared. However the strategic issues should be added to the list of factors influencing the recognition of elimination

candidates that was identified by Avlonitis (1986): product diversity, operations technology, technological change and market competition.

The associations are logically sound and provide the basis for further investigation into the tactical manifestations and implications of strategy, an area which has been identified as neglected by leading marketing academics (Anderson 1982, Wind and Robertson 1983, Kay and Diamantopoulos 1986).

Turning to the implications for product elimination decision-making, we might hypothesise further by suggesting that strategic attention given to growth issues might entail more built-in checks on product performance. Such a hypothesis needs further attention, and still says nothing about the effectiveness of removing the deadwood from the range.

The relationships between recognition criteria and the precipitating circumstances are presented in paragraph 7.6.2.

7.5 The Implementation of Deletion Decisions

The fourth and final aspect of behaviour studied at the company level was the actual implementation of the elimination decision. Two sets of issues are relevant here: the implementation strategies and the implementation factors which affect the choice of strategy.

7.5.1 The Implementation Strategies

In order to gain a picture of the relative importance of the strategies used by the interview companies, at the mail survey stage, respondents were asked to rate how frequently each one was used. The scale used ran from 1, indicating a strategy was never used, to 5, indicating a strategy was used very often. The resulting mean scores and standard deviations are given in Table 7.23.

Table 7.23 Frequency of Use of the Implementation Strategies

Strategy	Mean score	Standard deviation
Run out (milk)	3.5	.78
Phase out immediately	2.9	1.1
Drop from the standard range; reintroduce as a special	2.8	1.3
Drop immediately	2.2	.94
Sell out	1.7	.88

n = 166

Taking the 5 industry categories as a whole, the run out, or "milk" strategy is used most often. Indeed, this is the strategy most frequently cited in early, normative literature (Alexander 1964; Kotler 1965; Talley 1964) and was the most frequently-used strategy in the sample companies in Avlonitis' study (1983).

In order to see whether or not the strategies varied by industry, the Kruskal-Wallis one way anova test was carried out. Table 7.24 gives the results.

Table 7.24 Significant Differences in the Frequency of Use of Elimination Strategies Among Industries

Strategy	Mean Rank for Each Industry					Sign
	A	B	C	D	E	
Drop immediately	97	92.1	81.4	78.5	66.2	10%
Phase out immediately	100	75.5	91.6	82.2	62.9	5%
Sell out	87.3	83.1	63.8	85.0	94.7	10%
Drop from the standard range	57.3	96.1	74.9	96.4	89.9	1%

The table shows substantial differences in the strategies used to drop products among industries. The quicker methods of executing the deletion are in those industries where there is large-batch

production and where we might expect companies to sell from finished stock: fast moving consumer goods, industrial operating supplies and consumer durables.

Further, in these markets a high number of substitute products are available for customers. That the "drop immediately" option is so concentrated in fast-moving consumer goods companies explains why Avlonitis' (1983) failed to find it used by any of the engineering companies he studies.

Dropping a product from the standard range and introducing it as a special is an option far more amenable to industrial goods companies than to consumer goods companies. Clearly, the industrial goods companies are more frequently involved in selling a specific "capability" than a finished product.

Similarly, the "sell out" option is more amenable to the industrial goods company where manufacturing units are smaller, and do not always require high profile, high investment operation.

The only difference in the importance of strategies among company sizes was "run out". Small companies scored a mean rank of 71.9, medium sized companies scored a mean rank of 98.2 and large companies, a mean rank of 90.3. Both medium and large companies were significantly different from small companies at 1% level.

This might be explained by the fact that smaller companies either do not have sufficient advertising and support invested in a product that could be retrieved, or do not have the resources necessary to continue manufacturing a dying product.

With the basic description completed, attention was turned to the potential effect of strategic issues on the implementation strategies. Spearman's rank order correlation coefficients were

calculated between the two sets of variables, and only two coefficients were significant at the five per cent level (See Appendix 11). Forecast of market size and share is negatively associated with dropping the product as a standard, reintroducing it as a special ($r_s = -.17$, $p = .05$). Similarly, definition of product-markets is negatively associated with dropping the product as a standard, reintroducing it as a special ($r_s = -.17$, $p = .05$). However, as these are the only significant coefficients (at 5%) out of 50 it is possible that they have arisen by chance.

7.5.2 The Implementation Factors

From the interview findings it was clear that a number of factors, specific to the implementation stage, exerted considerable influence on the actual method of withdrawal. The relative importance of the factors was measured directly on a five-point scale. The mean scores and standard deviations are shown in Table 7.25.

Table 7.25 The Relative Importance of Implementation Factors

Implementation Factors	Mean Scores*	Standard Deviation
Stock on hand	3.6	1.0
Residual demand	3.1	.9
Effect on middle men and customers	3.0	0.9
Availability of a replacement product	3.0	1.2
Status of replacement parts	2.1	1.1
Time required to shift executives, workforce and resources to other opportunities	2.1	1.0
Seasonal issues	1.8	1.0
Salvage value of machinery and equipment	1.7	0.8

* Measured on a five-point scale where 5 = extremely important and 1 = not at all important

n = 166

Stock on hand, the effect on middle men and customers and the availability of a replacement product are the most important issues affecting the method of withdrawal.

Differences in the importance of the issues among industries were detected once again using Kruskal-Wallis one way anova. Results are given in Table 7.26.

Table 7.26 Differences in the Importance of Implementation Factors Among Industries

Implementation Factor	Mean Rank For Industries					Sign.
	A	B	C	D	E	
The availability of a replacement	68.2	71.8	93.9	82.2	92.3	10%
Seasonal issues	110.9	77.2	94.2	63.9	67.4	1%
The status of replacement parts	60.9	75.3	75.9	84.4	112.9	1%

As might be expected, the consumer goods companies were significantly more concerned with seasonal issues, while industry E, heavy capital equipment companies, were significantly more concerned with provision of replacement parts.

The availability of a replacement product was of greatest concern to industry C, consumer durables. This is in keeping with the high number of replacements effected over the previous five years in this industry. Similarly, industry E places status of replacement parts high on the list of factors, due to the need for capital equipment to be serviced for the length of its functional life.

No difference in the importance of the factors was found among company sizes.

Associations between the implementation factors and the strategic

issues were tested using the Kruskal-Wallis one way analysis of variance. Of the 80 correlations, 18 were significant at the 5 per cent level (See Appendix 12).

These are shown in Table 7.27.

Table 7.27 The Significant Associations between Strategic Issues and Implementation Factors

Implementation Factor	Definition of product markets	Long-term investment	Future sales volume	ROI	Market Share	Mergers	Company Image	Forecasts of Technological Change
Residual demand	.25 ^a	.24 ^a	.20 ^b					.24 ^a
Salvage value		.17 ^b		.27 ^a				
Replacement availability			.20 ^b		.22 ^a .17 ^b		.33 ^a .17 ^b	.30 ^a
Stock on hand								
Time needed to shift resources						.21 ^a		.20 ^b
Replacement part stocks					.19 ^b		.19 ^b .19 ^b	.28 ^a
Seasonal issues								

a = Significant at the 1 per cent level, or better (sum of both tails)

b = Significant at the 5 per cent level, or better (sum of both tails)

Residual demand is associated with four strategic issues and relates as much to finance issues (long-term investment) as to marketing and growth issues (forecasts of technological change, definition of product-markets and future sales volume). The salvage value of machinery and equipment is positively associated with long term investment, return on investment, while replacement availability, stock on hand and the status of replacement parts correlate with the strategic marketing issues of market share and company image.

These findings are interesting in that they show how the dimensions underlying the strategic factors are associated with dimensions of

implementing one tactical decision. The whole issue of the interface between strategy and tactics is of increasing interest to marketing academics (Cravens 1986, Turnbull and Valla 1986). These findings confirm the importance of this trend in that they reveal, to some extent, that the consideration of the many implications of timing an elimination decision may not be covered fully by managers concerned with only one aspect of strategy.

7.6 The Circumstances of a Specific Deletion

This first section describing behaviour at the product level is divided into two. Firstly, a number of facts describing the nature of the products, their importance to the companies and the types of elimination are described. Secondly, the circumstances causing the products to be considered for elimination are presented.

Table 7.28 The Types of Product Eliminated

Variables	Percentages	Means	Standard Deviation	Range of Values
Ranges eliminated	62			
Items eliminated	38			
Product replaced	44	n/a	n/a	n/a
Product completely eliminated	56			
% of company's sales volume		7.2	11.12	1-55
No fixed capital invested	61			
Fixed capital invested	39			
Product eliminated at introduction stage	10			
Products eliminated at growth stage	10			
Products eliminated at maturity stage	33			
Products eliminated at decline stage	47			
Number of years in the market		13.8	13.8	2-50

n = 156

7.6.1 Type of Product Elimination Decisions

The type of elimination was assessed by examining whether or not it was replaced, its importance in terms of the percentage of sales volume it accounted for when the decision was taken, and whether or not any fixed capital was invested solely in the product. The product's position on its life cycle curve, and the length of time that it had been in the market place are also examined. The descriptive statistics (frequencies) are given in Table 7.28.

The majority of products eliminated were at the "range" level (62 per cent) although a substantial number of items were eliminated (38 per cent). More products were completely eliminated than replaced, although the difference is not very great. The average volume accounted for by the products at the time of the decision was 7 per cent and most of the products (61 per cent) did not have any fixed capital invested solely in them. Taken together, these facts help us gain a picture of the likely impact of a deletion decision on the company. We can infer that the elimination of products is, by and large, more than getting rid of low-level troublesome products. Most are decisions about the future that will have a considerable impact on company operations and performance.

Tables 7.29a to 7.29d describe the significant differences in these descriptive statistics among industry.

Table 7.29a Differences in Number of Items and Ranges
Eliminated Among Industry Categories

Item or Range	Percentage of Eliminations in Each Industry				
	A	B	C	D	E
Item	60	42	36	27	27
Range	40	58	64	73	73

Significant at the 5 per cent level

Table 7.29b Differences in the Numbers of Complete Eliminations and Replacements Among Industries

	Percentage of Eliminations and Replacements in Each Industry				
	A	B	C	D	E
Complete elimination	67	62	39	68	48
Replacement	33	38	61	32	52

Significant at the 10 per cent level

Table 7.29c Differences in the Length of Time the Product Was in the Market Place According to Industry

	Average number of years for each industry					Sign
	A	B	C	D	E	
Average Number of years	13.5	19.2	9.8	14.5	13.5	5%

Table 7.29d Differences in the Amount of Sales Volume Accounted for by the Eliminated Product According to Industry

	Average % of sales volume accounted for by the eliminated product in each industry					Sign
	A	B	C	D	E	
	4.2	4.3	6.9	6.9	12.8	5%

As Tables 7.29a and 7.29d show, industry E, heavy capital equipment, eliminates more ranges and loses a far greater proportion of sales volume when eliminating a product. While this is to be expected in an industry where unit costs of goods are high (due to small batch and custom technology), hitherto it has not been empirically examined, nor have its implications for the elimination decision been considered.

With regard to the amount of fixed capital invested in the deleted product, and the stage of the product in its life cycle, no differences were detected among industry categories.

Turning to variances in the nature of the products eliminated according to the size of the company, only the length of time the product was in the market place was significantly different. (Tables 7.30 a and b).

Table 7.30a Difference in Life Span Among Company Sizes

	Average Life Span of Deleted Products In			
	Small Companies	Medium Companies	Large Companies	Sign.
Average number of years	14.7	16.7	8.8	5%

Table 7.30b Differences in Stage of PLC of Deleted Products
Among Company Size Categories

Stage of plc	Small Companies	% of Medium Companies	Large Companies	Sign.
Introduction	8%	3%	23%	NS
Decline	57%	47%	26%	1%

These tables show that more of the large companies eliminate products early in their life cycle (in small companies lack of success may eliminate the company). This empirically confirms some of our observations made in Chapter 2, in that not all eliminations occur at the decline stage of the PLC. In addition, companies responding to the demands of the market place through product differentiation, improvement and development - and it is the larger companies that have the resources to do this - will experience shorter life cycles altogether resulting in shorter elimination/replacement cycles.

An important aspect of the specific elimination investigated by the mail survey was whether or not they were considered to be part of overall product-market strategy. A total of 76 companies (49 per

cent) considered the elimination to have been part of overall product-market strategy and 80 companies (51 per cent) did not. No differences were detected according to industry or company size. The rationales for considering the elimination to be part of overall product-market strategy are given in Table 7.31.

Table 7.31 Reasons Why Elimination Was Considered as Part of Product-Market Strategy

Reason	% of Companies
Decision to buy the product	1%
Market concentration	15%
Product incompatible with image/objectives	8%
Rationalisation programme	6%
Modernisation of the range	19%
	<u>49%*</u>

n = 156

* 49 per cent of companies considered the elimination part of overall product-market strategy.

The description of these product-specific factors is necessary as a precursor to testing whether or not they influence the nature of the decision-making process. However, to examine the effect of each factor separately would be rather tedious and possibly unnecessary. At the heart of these product-specific factors is the need to assess the "importance of the product" in terms of the effect its elimination would have. The range of factors investigated was derived from careful analysis of the interviews. Before assessing their influence on the anatomy of the elimination decision, it was decided that the investigation could be more parsimoniously carried out if relationships among them were detected, or if they could be combined in some way.

As it was logical to expect that the life span of the product would increase as it proceeded through the stages of the PLC, one-way

analysis of variance was conducted to see if the life span of the deleted products were significantly different among the 4 categories of plc stage. The average life span for products deleted at each stage in the life cycle is shown in Table 7.32.

Table 7.32 The PLC and Life Span of Deleted Products

	Stage				
	Introduction	Growth	Maturity	Decline	Sign.
Average Life Span (years)	2.8	3.6	8.8	21.8	5%

Similarly, it could be expected that the percentage of sales volume that a deletion candidate accounted for would be more in the case of a "range" than for an "item". As the range/item issue was measured using a dichotomous variable and the percentage of sales volume was a continuous, ratio-level measurement, Pearson's r was computed and tested using student's t distribution. The correlation coefficient is .23, $p = .002$, indicating a significant relationship between the "level" (whether it was a range or an item) of the product and the amount of sales volume it accounts for.

Firstly, it was expected that ranges would have more fixed capital invested in them than items. As both these aspects were measured categorically they were cross-tabulated. Results are shown in Table 7.33.

Table 7.33 Fixed Capital Invested Solely In Ranges and Items

	% of	
	Ranges	Items
No fixed capital invested	51	80
Fixed capital invested	49	20

Significant at the 1 per cent level

The majority of items do not have fixed capital solely invested in them.

These three results enabled the researcher to use the PLC stage as a surrogate measure for the life span of the product and its "level" as a reasonable indication of the sales volume it accounted for, and the likelihood that fixed capital was invested solely in it. Although doing this entailed a loss of information, this was felt preferable to treating each variable separately and at length.

The final aspect of the "importance" dimension of the product was whether or not it was to be replaced. The interview data led to the hypothesis that a replacement was less of an upheaval than a complete discontinuation. This is because resources can be redeployed, a replacement is made available for customers and a gap is not left in the market. This said, it was hypothesised that the decision-making process would be altered accordingly. Rather than treat this dichotomous variable separately, as a third measure (along with PLC stage and the product "level") of the importance or impact of the deletion, we decided to combine it with the product "level". This led to the development of the Dropclass matrix (see Figure 7.2) whose name is derived from the parallel work of Robinson, Faris and Wind (1967).

Figure 7.2 The Dropclass Matrix

Product level	Type of Elimination	
	Complete Elimination	Replacement
Product Item	Elimination of versions, sizes, models (DC1: 22%)	Replacement of versions, sizes, models (DC2: 16%)
Product Range	Elimination of one or more range(s) (DC3: 34%)	Replacement of one or more range(s) (DC4: 28%)

(percentages shown are the numbers of mail survey deletions falling into each category).

Robinson, Faris and Wind (1967) developed an influential explanation of differences in organisational buying behaviour by distinguishing different types of buying situations or "buyclasses", based on situational or product-specific factors.

In categorising the deletion decision into one of four types, a direct situational explanation of the decision can be derived. Tables 7.34 and 7.35 show the numbers of each dropclass in each industry and size category.

Table 7.34 Dropclass in Each Industry

Dropclass	% In Each Industry				
	A	B	C	D	E
Item elimination	37	29	11	18	18
Item replacement	23	13	25	9	9
Range elimination	30	33	28	49	30
Range replacement	10	25	36	24	43

NS (2 out of 10 cells with expected frequencies of less than 5).

Table 7.35 Dropclass in Each Size Category

Dropclass	% In Each Size		
	Small	Medium	Large
Item elimination	24	26	13
Item replacement	19	8	18
Range elimination	34	34	33
Range replacement	23	32	36

Not significant (NS)

Although not statistically significant, Table 7.34 shows that range replacement is most common in industry E, where high investment costs and high unit costs of products implies that companies dropping a range - even a slow-moving range - stand to lose considerable amounts of money.

7.6.2 The Precipitating Circumstances

During the interview phase 17 factors precipitating the elimination of a product were discovered. One of the objectives of the mail survey stage was to assess their relative importance.

Table 7.36 The Relative Importance of The Precipitating Circumstances

Precipitating Circumstances	Mean*	Standard Deviation
Poor profit performance	3.8	1.30
Poor sales	3.7	1.15
Decline in market potential	3.1	1.33
Development of a new product	2.8	1.57
Operational problems	2.7	1.30
Competitive activity	2.7	1.36
Poor fit with company capabilities or strategic plans	2.6	1.39
Poor quality/design	2.5	1.40
Company resources required elsewhere	2.3	1.23
Variety reduction policy	2.4	1.18
Poor fit with company image	1.9	1.17
Change in exchange rates	1.9	0.97
Problems associated with raw materials and parts	1.7	0.97
Parent company decisions and policy	1.6	1.03
Government policies and regulations	1.5	0.96
Third party decisions	1.5	0.94
Rationalisation due to mergers and acquisitions	1.3	0.87

* Measured on a five-point scale where 1 = little or no importance and 5 = extreme importance.

While the most important precipitating circumstances are "poor sales performance", "poor profit performance" and "decline in market potential", it is interesting to note that none scored a mean exceeding 3.7. This is probably due to the phenomena of overlap and combination described in the chapter presenting the interview findings. In addition, as we are dealing with a single specific elimination per respondent company, we would expect that a relatively small number of circumstances would be noted as very

important and the rest as not at all important.

Due to the highly-skewed frequency distribution and the previously-identified problems of overlap and combination, a cautious attitude regarding population distribution and the quality of measurement was adopted. This said, non-parametric tests of significance were used to identify any variation in the importance of the precipitating circumstances among industry categories and company sizes. (See Table 7.37 and 7.38).

Table 7.37 Differences in the Importance of Precipitating Circumstances Among Industries

Precipitating Circumstances	Mean Rank Score in Each Industry					Sign.
	A	B	C	D	E	
Operational problems	89.1	85.6	54.8	88.7	81.	1%
Declining market potential	64.5	60.4	82.5	80.8	100.3	1%

Table 7.38 Differences in the Importance of Precipitating Circumstances Among Company Sizes

Precipitating Circumstances	Mean Rank Score for Each Size of Company			Sign.
	Small	Medium	Large	
Competitive activity	71.7	86	88.7	10%
Poor sales	85.7	65.3	78.6	10%
Poor fit with company strategy	73.8	77.9	92.3	10%

Table 7.37 shows that industry E, heavy capital equipment is most concerned with declining market potential, as might be expected, since there is great risk associated with products becoming technically obsolete. Indeed, Avlonitis (1985) found that fast-moving technological environments enhanced the importance of this particular factor while industry C, consumer durables is least beset by operational problems leading to an elimination. This

might be explained by the fact that companies in this industry are more likely to eliminate due to continuous product development.

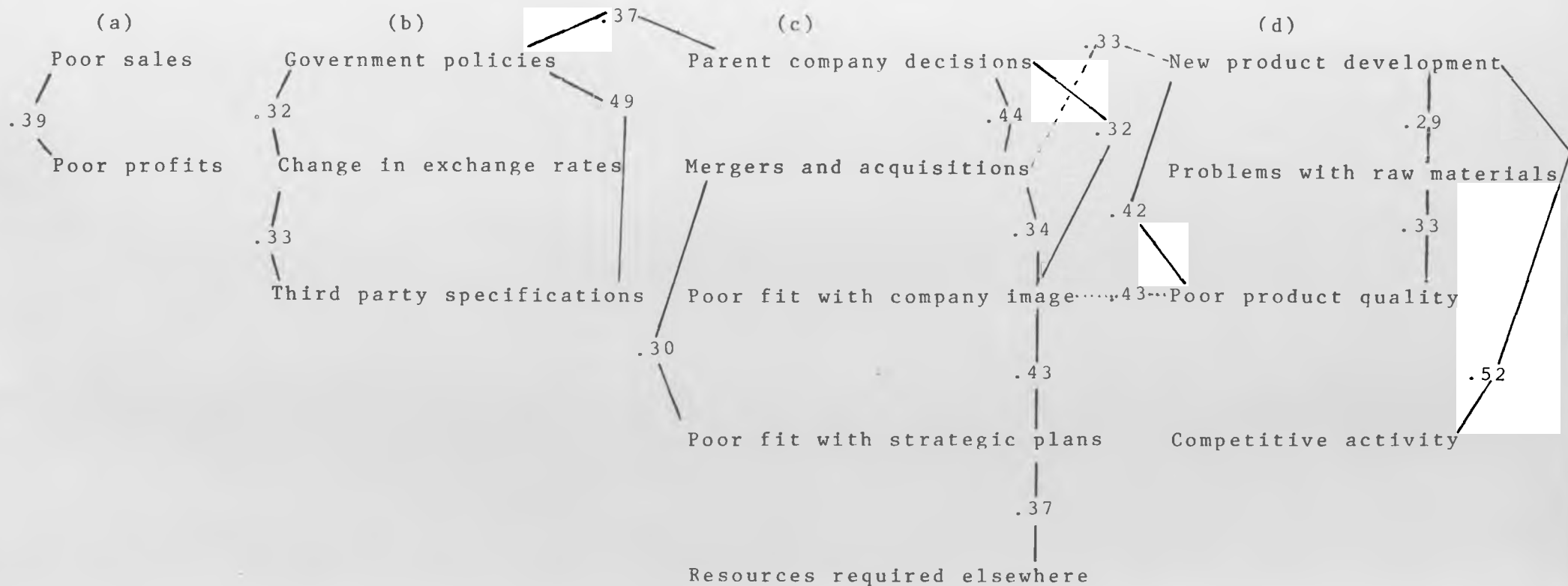
During the interview phase, five sets of precipitating circumstances were identified; a) crisis, b) company policy, c) development of new and improved products, d) coercion by external forces, e) the unsuccessful new product.

In order to see whether any relationship existed among the precipitating circumstances during the mail survey, a correlation matrix was constructed, based on Spearman's rho.

Although principal components analysis would have been more easily interpreted, the data were considered less than suitable for a parametric test of this nature. Appendix 13 gives the correlation matrix, while the highest correlations ($>.30$) and most significant results ($p = .000$) were used to pick out four "groups" of highly inter-correlated (within groups) precipitating circumstances (See Table 7.39).

These four groups do not account for all the correlation above .3. Some precipitating circumstances seemed to be correlated with several others, but for reasons of clarity in the diagram, they are not shown. Specifically, "a change in exchange rates was significantly associated with "problems with raw materials and parts ($r_s = .37$), "eliminations due to mergers and acquisitions" ($r_s = .51$) and eliminations due to a product having a "poor fit with the company's image" ($r_s = .32$).

Table 7.39 The Inter-relationships Among the Precipitating Circumstances



The first group (a) which does not seem to be associated with variables in any other group, can be seen as the mail-survey equivalent to the "crisis" group. The next three groups are related to each other through certain correlations, which are shown. Group (b) consists of three precipitating circumstances over which a company has little or no control. Group (c) comprises the most strategy-related precipitating circumstances, while group (d) involves variables related to product development.

To gauge whether or not the category of "unsuccessful new product" had a grounding among the mail survey respondents, a simple count of the number of products at the introductory stage was carried out. Of the 156 specific eliminations, 16 (10.3 per cent) were deleted at the introductory stage. Over half of these (63 per cent) were ranges, and 80 per cent were replaced.

At the interview stage of this research, some speculative associations were drawn between the circumstances that precipitate a company's elimination process and the strategic planning issues the company considers. To test this hypothesis, Spearman's rank order correlation coefficient was used, together with the t statistic to test for significance. The correlation matrix is shown in appendix 14. Of the 170 coefficients, 18 are significant at the 5 per cent level and a further 14 are significant at the 10 per cent level. (See Table 7.40) Although the number of significant correlations is greater than one would expect from purely random relationships, the strength of the relationships tends to be rather weak. This can be explained by the fact that the strategic issues are measured "at the company level"; this means that their relevance is measured in general. The importance of the precipitating circumstances, however, is measured in the case of one specific product. Although it is not unreasonable for the precipitating circumstances of one elimination to have been affected by what is of general relevance to the company's strategic planning, a weak relationship is to be expected. Had the

precipitating circumstances also been measured in general terms, stronger and more significant relationships could have been expected.

This said, some of the associations confirm the observations made at the interview survey stage.

Firstly, new product development (NPD), as a precipitating circumstance, is associated with those strategic issues related to the growth and development of the firm. However, it should be recognised that this perhaps says more about the factors triggering new product development than it says about elimination behaviour!

"Resources required elsewhere" is positively associated with the strategic issue of "cashflow/liquidity" ($r_s = .14$, $p = .10$) and negatively associated with "future sales volume" ($r_s = -.14$, $p = .10$). This backs up the intuitive proposition developed during the interview phase that a financial emphasis is more likely to encourage the removal of products to free resources than might a sales volume or marketing emphasis.

Table 7.40 Significant Relationships Between the Strategic Issues and the Precipitating Circumstances

Definition of the Company's Product-Markets
Competitive activities

Future Sales Volume
New product development

Mergers and Acquisitions
Poor-fit with company image

Company Image/Reputation
Operational problems
New product development

Forecasting Technological Change
Government policies and regulations
Third party decisions
Competitive activity
New product development
Decline in market potential

Table 7.40 (cont'd) Significant Relationships Between the Strategic Issues and the Precipitating Circumstances

Forecasting Technological Change (cont'd)

Poor product quality/design
 Rationalisation due to mergers and acquisitions
 Poor fit with company image
 Parent company decisions
 Change in exchange rates

New Product Development

Development of a new product
 Poor sales
 Poor fit with company image

Turning to the effect of strategic issues on one of the other product-specific variables, the life span of the deleted products, a rather more dramatic finding emerges. Of the nine correlation coefficients (Spearman's rho), three are significant at the 5 per cent level, and one at the 10 per cent level. In addition, the direction of the association is negative, showing that as the relevance of defining the company's product markets, forecasting market size and share, the company's image and new product development increases, the number of years the deleted product was in the marketplace decreases. (see Table 7.41)

Table 7.41 The Life Span of Deleted Products and the Strategic Issues

	Strategic Issue		
	Definition of company product-markets	Forecasts of market share	NPD
Life Span	-.17 ^b	-.24 ^a	-.18 ^b

a Significant at the 1 per cent level

b Significant at the 5 per cent level

To conclude this section describing the effect of strategic issues on the elimination triggers, it is fair to say that we have only begun to scrape the surface of the relationships at play. Perhaps

the findings in Table 7.31 give a better indication of the relationship between triggers and strategy. Considerable evidence exists suggesting the nature of the relationship, but it is necessary to design a research study tailored to this area alone. Further, it would be of greater managerial interest to measure the success of strategic eliminations, compared to "control" or operational eliminations.

In order to examine the link between precipitating circumstances and recognition criteria, Spearman's rank order correlation coefficients were computed. Of the 255 correlations, 47 are significant at the 5 per cent level or better, although, as with the strategic issues, the strengths of the relationships are rather weak. Table 7.42 shows the relationships. (See Appendix 15).

Table 7.42 Significant Relationships Between the Recognition Criteria and the Precipitating Circumstances

Profit margin/contribution

- Government policies and regulation
- Decline in market potential
- Poor profit performance
- Development of a variety reduction policy

Price trends

- Competitive activity
- Parent company decisions and policies
- Government policies and regulations
- Change in exchange rates
- Rationalisation due to mergers and acquisitions
- Decline in market potential

A product's share of the company's sales

- Decline in market potential

Sales versus resources utilised

- Company resources required elsewhere

Stock levels

- Company resources required elsewhere
- Change in exchange rates
- Competitive activity
- Third party decisions

Table 7.42 (cont'd) Significant Relationships Between the Recognition Criteria and the Precipitating Circumstances

Market share

Poor product quality/design
Development of a new product
Poor fit with company image
Parent company decisions and policies

Market growth rate

Development of a new product
Poor product quality/design
Competitive activity

Service levels

Change in exchange rates

Operational problems

Change in exchange rates
Development of a variety reduction policy
Rationalisation due to mergers
Poor fit with company capabilities and strategic plans
Parent company decisions
Decline in market potential
Development of a new product
Problems associated with raw materials/ parts
Poor fit with company capabilities

Actual versus projected production process

Change in exchange rates
Decline in market potential

Product's position on its life cycle curve

Decline in market potential
Poor fit with company image
Development of a new product
Rationalisation due to mergers and acquisitions

Customer acceptance

Poor product quality/design
Competitive activity
Development of a new product
Government policies and regulations

Competitive activity

Competitive activity
Development of a new product
Poor quality

As the table shows, most of the review criteria are associated with more than one precipitating circumstance, which is to be expected, given the overlapping nature of both sets of variables.

"Company resources required elsewhere" is positively associated with internal review criteria such as stock levels and sales versus resources utilised. Not only does this underline the internal consistency of the data, it also serves to show how tight financial control can help management recognise the opportunity cost of maintaining some products.

The development of a new product is positively related to several traditional marketing review criteria: market share, market growth rate, the product's position on its life cycle curve, customer acceptance and competitive activity.

In order to investigate whether or not there were any differences in the elimination decision according to the product specific factors, two analyses were carried out. Firstly, Kruskal-Wallis one way analysis of variance was used to test for significant differences in the importance of the precipitating circumstances according to the stage of the product on its life cycle curve. (See Table 7.43).

Table 7.43 Differences* in Precipitating Circumstances Among PLC Stages

Precipitating Circumstances	Mean Rank for Each PLC Stage				Sign.
	Introduction	Growth	Maturity	Decline	
Operational Problems	106.4	87.5	75.3	71.9	5%
Competitive activity	64.6	46.1	88.8	81.3	1%
Variety reduction policy	61.2	68.8	74.6	87.6	10%
Declining market potential	46.6	41.9	65.5	101.3	1%
Poor sales	98.6	78.5	61.5	84.9	1%

* Only significant differences are shown.

Secondly, the same test was used to look for significant differences in the importance of precipitating circumstances according to the dropclass (see Table 7.44).

Table 7.43 shows that products dropped early in their life cycles have high mean ranks for "operational problems" and "poor sales". That these reasons would be cited for dropping new products is not surprising. Similarly, products in the decline stage of their life cycles show highest mean ranks for variety reduction policy and declining market potential. Competitive activity, on the other hand is the most important reason behind the elimination of mature products, reflecting increased and intense competition at this stage in the PLC.

Table 7.44 Differences in Precipitating Circumstances Among Dropclasses

Precipitating Circumstances	Mean Rank Score for Each Dropclass				Sign.
	Item Elimination	Item Replacement	Range Elimination	Range Replacement	
Operational problems	79.1	57.4	86.9	78.2	10%
Competitive activity	64.7	88.4	68.9	94.9	1%
New product development	65.4	109.9	53.3	101.0	1%
Resources required elsewhere	81.5	66.6	94.3	62.4	1%
Declining market potential	93.1	74.5	64.5	84.6	5%
Poor profit	80.3	72	91.1	65.5	5%
Poor quality	72	81.6	65.2	95.6	1%
Poor fit with strategy	82.6	70.4	88.9	67.3	10%

As might be expected, no significant differences were found among the dropclasses with respect to precipitating circumstances that related to external forces. Replacements had the highest mean rank for precipitating circumstances relating to product development.

Range eliminations showed the highest mean ranks for those precipitating circumstances associated with strategy. This

suggests that the more important the product (the dropclass being a surrogate measure of importance) the greater its likelihood of being regarded strategically, and not being "relegated" to the purely tactical level.

7.6.3 The Revitalisation of a Specific Product

In analysing the revitalisation stage of the 156 product case histories, the first step was to describe general patterns in the company. Table 7.45a shows the "corrective action considered" in descending order of importance. Of the 156 case histories, only 65 (41 per cent) were revitalised.

Table 7.45a The Importance of the Alternative Corrective Measures

Corrective Action	Mean Score*	Standard Deviation
Increase effort by sales force	6.1	2.8
Cost reduction	5.9	3.0
Product modification/reformulation	5.5	3.1
Production efficiency improvements	5.1	3.0
Price decrease	4.8	3.1
Quality improvements	4.6	3.2
Sales promotion increase	4.5	2.9
Development of new markets	4.0	3.0
Product range reduction	3.8	2.8
Product range extension	3.5	2.8
Market concentration	3.3	2.7
Packaging changes	3.2	2.8
Distribution improvements (shelf space)	3.2	2.8
Product factoring	3.2	2.9
Price increasing	3.1	2.7
Increase in advertising	2.5	2.3
Change in channels of distribution	2.4	2.3
Guarantee extension	1.2	0.9

* Measured on a five point scale where 9 = considered to a great extent and 1 = not considered at all. N = 65

Table 7.45b shows the corrective action adopted by the companies.

Table 7.45b Methods of Revitalisation - Actual Adoption Rate

Method of Revitalisation	Percentage of companies Adopting
Increase effort sales force	17%
Cost reduction	17%
Product modification/reformulation	15%
Quality improvements	13%
Price decrease	12%
Sales promotion increase	12%
Production efficiency improvements	9%
Market concentration	6%
Product range reduction	6%
Packaging changes	5%
Distribution improvements (shelf space)	5%
Price increase	4%
Development of new markets	4%
Product range extension	4%
Increase in advertising	3%
Change in channels of distribution	2%
Product factoring	2%

Only 17 methods are shown as guarantees of extension were not adopted by any company.

N = 65

The overall pattern of the tables is similar.

Table 7.46a shows the significantly different types of corrective action considered according to industry category.

Table 7.46a Significant Differences in the Types of Corrective Action Considered

Corrective Action	Mean Rank Score In Each Industry					Sign.
	A	B	C	D	E	
Cost reduction	21.9	32.1	35.6	32.9	43.7	5%
Increase in sales promotion	39	22.1	42.9	24.7	37	5%
Development of new markets	21.2	31.2	37.6	38.1	37.1	10%

Cost reduction is considered to a greater extent in industry E, heavy capital equipment, where the value engineering and analysis can be more easily carried out. With regard to the methods of revitalisation actually adopted, "production efficiency improvements" was used to the greatest extent in industries B and D, "product range extension" was not used by consumer goods companies. Quality improvements were adopted in industries A, B and E, while distribution improvements (shelf space) were of greatest use in Industry A (See Table 7.46b).

Table 7.46b Differences in the Adoption of Corrective Action among Industries

Corrective Action	% of Companies Adopting In Each Industry				
	A	B	C	D	E
Quality Improvements	20	21	3	6	15
Product range extension	-	8	-	11	3
Production efficiency improvements	7	17	3	17	6
Distribution improvements	17	-	6	3	-

Significance misleading due to large number of cells with expected frequency of less than 5.

In order to gauge the effect of the precipitating circumstances on the consideration of corrective action, Spearman rank order correlation coefficients were computed. Of the 189 coefficients, 37 were significant, a higher proportion than would have been expected for random relationships (See Appendix 16).

The majority of the precipitating circumstances are significantly associated with several corrective actions. This confirms the interview survey findings, and the research questions they generated.

The significant correlations ($p < .05$) are tabulated below to enhance interpretability (Table 7.47). Poor sales was associated with three methods of revitalisation, but most significantly with "sales promotion increase" ($r_s = .44$, $p = .000$). Interestingly, it is negatively associated with "price increase", ($r_s = -.21$, $p = .10$) which may be explained by the chance that increasing the price will kill all demand for the product.

Poor profit, on the other hand, was most significantly associated with "market concentration" which means pulling out of certain markets or segments. While also associated with more positive corrective action, it is interesting to note the way in which the decision process is altered between a product with poor sales and one with poor profits.

New product development as an elimination trigger is associated with a variety of corrective actions. Unfortunately it was not possible during the mail survey to distinguish proactive from reactive NPD, which seemed to have an effect on the revitalisation stage in the interviews. However, as Table 7.47 shows, the high number of corrective actions associated with this trigger shows that the NPD time is long enough to warrant keeping the old product going. An alternative explanation, however, is that the decision to develop a new product was taken after the corrective measures failed. In view of the recent concern about the phasing of new products, this is an interesting and worthwhile area for further study.

Table 7.47 Significant Relationships Between Methods of
Revitalisation and the Precipitating Circumstances

Poor sales

Sales promotion increase
Price decrease
Increase in effort by the sales force

Poor profit

Market concentration
Change channels of distribution

Declining market potential

Decrease price
Development of new markets
Product factoring

Operational problems

Increase in sales promotion
Market concentration

Poor fit with company image

Packaging changes
Quality improvements

New product development

Quality improvements
Price decrease
Packaging changes
Advertising increase
Increase in sales promotion
Product factoring
Extend the warranty

Problems with raw materials and parts

Change channels of distribution

Poor quality/design

Quality improvements
Product modifications

Competitive activities

Product factoring
Price decrease
Extend the warranty
Product factoring

Third party decisions

Product factoring
Price decrease
Improvements in distribution (shelf space)

Table 7.47 (cont'd) Significant Relationships Between Methods of Revitalisation and the Precipitating Circumstances

Parent company decisions

Extend the warranty
Product range extension

Change in exchange rates

Change in channels of distribution
Product factoring
Cost reduction

Variety reduction

Product range reduction

Poor fit with strategic objectives/company capabilities

Change channels of distribution

Mergers and acquisitions causing rationalisation

Quality improvements

Poor product quality is most significantly related to "quality improvements", confirming the interview stage of the study and internal consistency of the data.

Variety reduction was positively associated with only one corrective action: "product range reduction". Resources required elsewhere was also associated with this action ($r_s = .23$, $p = .06$). As well as confirming the interview conclusions, these findings contribute to the face validity of the results.

Turning to the effect of other product-specific factors, some interesting differences in behaviour came to light.

Differences in the revitalisation methods considered for products at various stages in their PLCs were investigated using Kruskal-Wallis one way analysis of variance (See Table 7.48).

Table 7.48 Differences in the Consideration of Corrective Action Throughout the PLC

Corrective Action	Mean Rank for Each PLC Stage				Sign.
	Introduction	Growth	Maturity	Decline	
Price Increase	21	35.5	40.8	26.7	8%
Market concentration	39	25	38.4	27.3	10%

As Table 7.48 shows, price increase is a corrective measure most often applied at the maturity stage of the PLC, not the decline stage, as many of the normative writers advise (Michaels 1971, Talley 1964). It may be that the harvest option must take place in maturity, rather than decline when a price increase may hasten the demise of a product.

Market concentration is also an option for maturity, but more surprisingly, it is equally used at the introductory stage as a corrective measure. This may be indicative of the option available to management faced with an unsuccessful new product, namely to focus or target the product.

The extent to which product revitalisation is attempted does not vary significantly with their life cycles.

The same test was used to identify differences in corrective actions according to the dropclass. (See Table 7.49).

Table 7.49 Differences in the Consideration of Corrective Action According to Dropclass

Corrective Action	Mean Rank Score for Each Dropclass				Sign.
	Item	Item	Range	Range	
	Elimination	Replacement	Elimination	Replacement	
Quality improvements	26.3	36.1	24.6	42.8	1%
Product modification	23.8	45.1	29	35.1	5%
Production efficiency improvements	21.5	23.5	36.1	37.4	5%

Quality improvements and product modification are of greatest importance where ranges or items are to be replaced. It is logical that if the replacement products are to succeed, the old products must not develop a bad reputation. An alternative explanation is that, having tried to improve the quality and modify the product, there was no alternative but to replace it completely.

Production efficiency improvements are of greatest interest where ranges are concerned. Range manufacture probably has more scope for improving efficiency than is the case with items.

No significant difference was found among the dropclasses regarding the revitalisation attempt per se.

7.6.4 The Evaluation of a Specific Product

To gain a picture of the evaluation stage of the case histories, respondents were asked to say to what extent they considered each of the "evaluation factors" that had come to light during the interview phase of the study. Further, they were asked to say whether any of these factors had led to the deferral of a decision to eliminate. This approach was taken because considering something to be important is not always quite the same as allowing it to influence behaviour. Table 7.50 shows the frequencies. The product's market potential, was "considered to a great extent" in the majority of the instances, but in general terms it is the effect of elimination on customers which has caused the decision to be deferred. On the other hand, the effect on fixed capital and the interchangeability of parts have caused the fewest deferrals. However, this does not permit us to infer that the effect on customers is more important a consideration than, say, the interchangeability of parts.

This stage in the decision process essentially boils down to "drop or keep", and 63 per cent of the companies claimed to have, at some time, deferred a decision because of some of these factors.

This said, some of the evaluation factors are to do with the negative aspects of elimination, and some with the positive aspects. Had the question focused on the positive aspects, the resulting frequencies might have been quite different.

Table 7.50 The Importance of the Evaluation Factors

Evaluation Factor	Mean*	Standard Deviation	Deferral %
Product's market potential	7.8	2.0	19
The existence of substitutes on the market	5.6	3.1	20
Effect of the elimination on sales volume	5.5	2.8	16
The availability of a new product	5.4	3.3	24
Effect of the elimination on customers	5.2	2.6	25
Reallocation of resources to other opportunities	5.2	2.7	8
Effect of the elimination on other products	5.1	2.9	16
Effect of the elimination on overhead recovery	5.0	2.6	16
Effect of the elimination on working capital	4.8	2.7	1
The product's contribution to a profit centre	4.8	3.1	13
Effect of the elimination on the company's image	4.3	2.7	13
Effect of the elimination on "full range" policy	4.3	2.9	18
Effect of the elimination on capacity utilisation	4.2	2.5	6
Reallocation of executive and selling time	3.9	2.6	8
Effect of the elimination on the employment prospects of the workforce	3.8	2.6	11
Competitive reaction to the withdrawal	3.2	2.4	6
Interchangeability (commonisation) of parts	2.9	2.5	4
Effect of the elimination on distribution (shelf space)	2.8	2.3	8
Effect of the elimination on fixed capital	2.8	2.3	4

* Measured on a five point scale where 9 = considered to a great extent and 1 = not considered at all.

N = 156

In order to test the effect of the company's size and industry on this stage of the decision, Kruskal-Wallis one-way anova was used for the consideration of factors and crosstabulation was used for the deferral factors. The deferral factors were measured at the nominal level. From Tables 7.51 and 7.52, it can be seen that industry is less important as an influence than size.

Table 7.51 The Effect of Industry Category on the Consideration of Evaluation Factors

Evaluation Factor	Mean Rank for Each Industry					Sign.
	A	B	C	D	E	
New product availability	69.2	73.1	93.7	69.6	83.0	NS
Effect on shelf space	99.7	81.8	79.1	66.7	68.8	5%

No significant - or even meaningful - difference was found regarding deferral factors.

Table 7.52 The Effect of Company Size on the Consideration of Evaluation Factors

Evaluation Factor	Mean Rank for Each Size Category			Sign.
	Small	Medium	Large	
Effect on overhead recovery	70.7	93.2	79.9	5%
Effect on fixed capital	70.8	90.5	82.3	10%
Product's contribution to a profit centre	68.5	88.0	89.3	5%
Effect on company image	70.9	87.6	84.6	10%
Competitive reaction	66.2	86.6	85.7	1%

In the main it is the medium-sized companies that are most aware of the risks of elimination. A possible explanation for this is that they are caught in the gap between having a small, tight organisation where elimination decisions can be taken with utmost control (or elimination = liquidation) and the risks dealt with beforehand, and being big enough to withstand the disruption the deletion will cause, both internally and externally.

Table 7.53 Differences among company Sizes with Regard to
Deferral Factors

Deferral Factors	% of Companies in Each Size Category			Sign.
	Small	Medium	Large	
Companies that have deferred	56	76	63	10%
Effect on overhead recovery	12	37	8	1%
Effect on "full range" policy	14	32	13	5%

In order to examine the relationships between the precipitating circumstances and the evaluation factors, Spearman rank-order correlations were computed. Of the 323 correlations, over 60 were significant at the 5 per cent level, a far higher proportion than would be expected from purely random relationships (See Appendix 17).

As Table 7.54 shows, nearly all the precipitating circumstances are correlated with several evaluation factors, and as many as seven precipitating circumstances are significantly associated with eight or more evaluation factors. This is indicative of the complexity of the decision no matter what its precipitating circumstances are.

This said, a number of interesting observations can be made.

Firstly, "poor sales" is negatively associated with eight evaluation factors, which means that the greater the importance of low sales volume in triggering the decision, the less important are the evaluation factors. In addition, "poor sales" is not associated positively with any evaluation factor. By extension we can infer from this information that the lower the sales volume, the less concerned managers need be of the consequences of dropping the product. However, given the average time that managers suspected products to be elimination candidates ($22\frac{1}{2}$ months), we may conclude that the low sales have become a rather familiar feature of the product.

Table 7.54 The Significant Relationships Between Evaluation Factors and the Precipitating Circumstances
(correlations are positive unless stated otherwise).

Poor sales

Product's contribution to a profit centre
 The effect of the elimination on employment for the workforce
 The effect of the elimination on customer/trade relations
 The effect of the elimination on company image
 Competitive reaction to the withdrawal
 The effect of the elimination on capacity utilisation
 The effect of the elimination on the recovery of overheads
 The product's contribution to overall sales volume
 NB: Although significant ($p < .05$) all associations are
 NEGATIVE

Poor profits

The availability of a replacement product (NEGATIVE)
 The existence of substitutes on the market (NEGATIVE)
 Competitive reaction (NEGATIVE)

Operational problems

The availability of a new product (NEGATIVE)

Poor fit with company image

The effect of the elimination on company image
 The effect of the elimination on capacity utilisation
 The effect of the elimination on the sales and profits of
 other products
 The effect of the elimination on fixed capital
 The product's contribution to a profit centre
 Competitive reaction to the withdrawal
 The effect of elimination on employment prospects for the
 workforce
 The interchangeability (commonisation) of parts and materials

New product development

The availability of a new product
 The existence of substitutes on the market
 The product's contribution to overall sales volume
 The effect of the elimination on the profits and sales of
 other products
 The effect on full range policy
 The effect of the elimination on company image
 The interchangeability (commonisation) of parts and materials
 Competitive reaction to the withdrawal
 Reallocation of resources to other opportunities (NEGATIVE)

Table 7.54 (cont'd) The Significant Relationships Between Evaluation Factors and the Precipitating Circumstances (correlations are positive unless stated otherwise).

Poor quality/design

- The availability of a new product
- The interchangeability of parts and materials
- The product's contribution to a profit centre
- The effect of the elimination on fixed capital

Competitive activities

- The availability of a new product
- The product's contribution to overall sales volume
- The interchangeability (commonisation) of parts and materials
- The effect of the elimination on employment prospects for the workforce
- Product's market potential
- The effect of the elimination on the recovery of overheads
- The existence of substitutes on the market

Third party decisions

- The existence of substitutes

Parent company decisions

- The effect of the elimination on fixed capital
- Reallocation of executive and selling time

Change in exchange rates

- The product's contribution to a profit centre
- The effect of the elimination on fixed capital
- Product's market potential (NEGATIVE)

Resources required elsewhere

- The reallocation of resources to other opportunities
- The reallocation of executive and selling time
- The effect of the elimination on working capital
- The effects of the elimination on the recovery of overheads
- The availability of a new product (NEGATIVE)

Variety reduction

- The interchangeability of parts and materials
- The existence of substitutes
- The effect of the elimination on full range policy
- The effect of the elimination on the recovery of overheads

Table 7.54 (cont'd) The Significant Relationships Between Evaluation Factors and the Precipitating Circumstances (correlations are positive unless stated otherwise).

Poor fit with company capabilities/strategic plans

- The effect of the elimination on fixed capital
- The reallocation of resources to other opportunities
- The effect of the elimination on capacity utilisation
- The reallocation of executive and selling time
- The effect of the elimination on the recovery of overheads

Rationalisation due to mergers

- The product's market potential
- The effect of the elimination on fixed capital
- The effect of the elimination on the recovery of overheads
- The product's contribution to a profit centre
- Interchangeability of parts and materials

"Poor profits" is also negatively associated with three evaluation factors. Specifically, the greater the importance of poor profits in triggering the product elimination process, the less importance is placed on the gap the deletion might leave. This shows how profit consideration will override other issues and confirms the interview findings.

"Operational problems" is negatively associated with the "availability of new products" which may be explained by the fact that, for products dropped in the introductory stages of their life cycles, respondents rated "operational problems" very highly as a trigger (see Table 7.43). If this means that a high percentage of products dropped due to operational problems are new products, then this negative association is easily understood.

"Resources required elsewhere" is positively associated with the reallocation of resources and executive time to other opportunities. This confirms the robustness of the data. Other than this, the effect on working capital - unfinished stocks - and therefore an overhead recovery is considered.

"Variety reduction policy" is positively associated with four factors, including "the effect of the elimination on full range policy" and "the recovery of overheads". This evaluation factor is associated with variety reduction only and confirms the testimony given by the Marketing Director of company A1 during the interview stage.

In general, as with the interview data, discernible patterns in the relationships were difficult to trace, largely because of the large number of associations. Data reduction was hampered by the inappropriateness of factor analysis and regression to the data. Thirdly, the evaluation stage was felt to be affected by product-specific factors as well as by the precipitating circumstances.

In order to test this hypothesis, Kruskal-Wallis one way anovas were used to detect differences in evaluation behaviour between products eliminated at different stages in their life cycles and dropclass.

Table 7.55 shows differences according to PLC stage while Table 7.56 shows differences according to dropclass.

Table 7.55 Differences in Evaluation Factors among PLC Stages

Evaluation Factors	Mean Rank for Each Stage				Sign.
	Intro	Growth	Maturity	Decline	
Product's contribution to overall sales volume	65.9	53.0	95.2	74.0	1%
Reallocation of executive time	91.8	80.0	86.7	68.3	10%
Effect on full range policy	56.9	88.9	88.4	72.9	5%
Product's contribution to a profit centre	67.2	64.9	90.7	74.2	10%
Effect on company image	69.0	82.5	92.7	68.5	5%
Competitive reaction to withdrawal	68.5	70.1	94.4	70.2	5%
Effect on customer/trade relations	81.3	85.6	92.5	65.2	1%

Table 7.56 Differences in Evaluation Factors Among Dropclasses

Evaluation Factors	Item Elimination	Mean Rank for Each Dropclass		Sign
		Item Replacement	Range Elimination Range Replacement	
Product's contribution to overall sales volume	55.3	71.9	87.3 87.6	1%
Availability of a new product	47.9	101.9	58.0 108.9	1%
Effect on the recovery of overheads	74.8	51.8	88.1 82.4	1%
Reallocation of resources	87.2	48.6	94.1 67.4	1%
Reallocation of executive time	82.9	65.6	88.8 67.8	5%
Interchangeability of parts and materials	69.2	88.2	63.9 96.1	1%
Existence of substitutes	57.6	101.9	65.2 93.9	1%
Competitive reaction to the withdrawal	70.2	83.2	69.5 91.2	10%
The effect on employment prospects	65.8	70.6	89.5 77.6	10%

Tables 7.55 and 7.56 show that product-specific factors have a considerable impact on the evaluation stage of the elimination decision.

Specifically, the reallocation of executive and selling time is of greater importance in the introductory stages of a product's life, when management is likely to be investing much time.

Further, the provision of a full range is a greater consideration during the growth and maturity phases.

Finally, it is during the maturity stage that several of the evaluation factors become notably important, and as 33 per cent of the products surveyed in this study were classified as mature, this is not insignificant. During the decline stage, the levels of concern about the evaluation factors are relatively low; during the maturity stage, the decision seems far more complex.

Where products are to be replaced, concern for the availability of the new product, the interchangeability of parts and materials, the existence of substitutes and the competitive reaction is significantly higher. This said, the existence of substitutes is of greatest importance where an item is to be replaced, while the competitive reaction is of concern where the entire range is to be replaced.

Where products are to be completely eliminated, of particular concern are the reallocation of resources and executive time to other opportunities, and the effect on employment. This trend is intensified where it is to be ranges that are completely eliminated.

Finally, the product's contribution to overall sales volume, and the effect of the elimination on the recovery of overheads is of greatest consideration when ranges are the focus of debate. This trend is intensified where these ranges are to be eliminated.

These analyses, together with the correlation between precipitating circumstances and evaluation factors, confirm the interview findings and provide answers to the research questions regarding the nature of the influence of product-specific factors on the content of the decision.

7.6.5 The Implementation of the Elimination Decision

The final stage in the analysis of a specific product elimination decision deals with the way in which the products concerned were actually withdrawn from the range. However, as the implementation factors were extensively investigated "at the company level", only the actual strategies used to remove the product from the range and the timing of the process are dealt with below.

7.6.5.1 The Implementation Strategies

In terms of the number of times each strategy was used, Table 7.57 shows that "phase out immediately" is the most important.

Table 7.57 Strategies Used to Withdraw Specific Products

Strategy	Number of Companies Using Strategy
Phase out immediately	65
Milk	46
Drop immediately	22
Drop from the standard range	19
Sell out	9
TOTAL	161*

* n > 156, as some companies ticked more than one option

For the specific deletions, therefore, an immediate phase-out was more common than in the general section of the questionnaire.

A simple crosstabulation analysis was carried out to study whether or not there were any significant differences in the implementation strategies used according to industry or company size.

Forty-seven per cent of companies in industry E, (capital goods) dropped products from the standard range, re-introducing it as a "special". (See Table 7.58). Although the x^2 statistic for this crosstabulation is large (12.5) it is distorted by the number of cells with an expected frequency of less than 5. Nonetheless, the patterns in the data cannot be ignored.

Table 7.58 Differences in Implementation Strategies According to Industry

Implementation Strategy	% of Companies Using the Strategy in Each Industry				
	A	B	C	D	E
Drop from the standard range	6	16	5	26	47

Cells with expected frequency < 5 = 5

There were no discernible differences in the implementation strategies used according to company size.

In order to test the relationship between the method of dropping the products and the precipitating circumstances, each of the methods of dropping was treated as a dichotomous variable, and a nonparametric test of association was computed: Spearman's rho. (See Appendix 18) The number of significant coefficients is 12, which is greater than the number that may have arisen by chance. Avlonitis(1983) found relatively few significant correlations between the implementation strategies and the contextual variables. He concluded that this was due to the fact that the method of elimination selected for a specific product is usually a function of the product's unique circumstances. Our current results confirm this. Table 7.59 summarises the results.

Table 7.59 Significant Relationships Between Methods of Implementation and The Precipitating Circumstances

Government policies and regulations

Drop the product from the standard range
Phase out immediately (NEGATIVE)

Competitive activity

Milk

New product development

Milk
Phase out immediately (NEGATIVE)

Declining market potential

Milk
Phase out immediately (NEGATIVE)

Poor sales

Sell out (NEGATIVE)

Poor profits

Drop immediately

Poor fit with company capabilities/strategic objectives

Sell out

Variety reduction

Phase out immediately (NEGATIVE)

Poor fit with company image

Milk (NEGATIVE)

As the table shows, the "drop immediately" option is positively associated with "poor profits", largely confirming the points raised during the interview survey.

A "milk" or "harvest" strategy is positively associated with "declining market potential", "competitive activity" and "new product development" - all situations where there is a comparative lack of urgency. On the other hand where a product is to be removed due to its poor fit with the company's image, then a harvest strategy would be at cross-purposes with overall strategy.

The most frequently-used strategy is negatively associated with four of the precipitating circumstances. A phase-out slowly strategy is therefore unsuitable for products dropped due to government policies and regulations, new product development, variety reduction and decline in market potential. In the first case, a change in government policy would probably result in immediate action, while, in the other cases, more time is needed to plan and effect the change to the entire range. Where a product is dropped due to declining market potential, it would be imprudent not to reap the benefits of a run out strategy, where some profit could be made of the remaining months of the product's life.

In order to investigate the influence of the other product-specific factors on the elimination strategy, crosstabulations were used and the χ^2 statistic computed.

Although not significant, of the cases where a "drop immediately" strategy was used, 50 per cent were in the maturity phase of their life cycles (see Table 7.60). Phase out immediately was most commonly chosen for mature and declining products. Milking was most commonly used during the decline stage.

Table 7.60 Differences in Implementation Among PLC Stages

Implementation strategy	% of products dropped for each stage				Sign.
	Introduction	Growth	Maturity	Decline	
Drop immediately	4	23	23	50	NS
Phase out immediately	17	14	31	38	5%
Milk	7	4	33	56	NS
Sell out	11	0	56	33	NS
Drop from the standard range	0	0	42	58	NS

In contrast, there were no meaningful patterns whatsoever among the dropclasses and the alternative means of withdrawal.

7.6.5.2 The Timing of the Elimination Decision

The final aspect of product elimination behaviour to be examined at the product-specific level is the timing of the decision.

Specifically, three issues are of interest: the length of time the product was "suspected" to be an elimination candidate (suspect time); the length of time between making the decision to drop the product and ceasing its production (cease production); the length of time between deciding to drop the product and removing it from the price list (catalogue removal).

Table 7.61 The Length of Time Products were Suspected to be Elimination Candidates (suspect time)

Number of Months	Number of products (%)
Less than 1	20 (13%)
1 - 5 months	60 (39%)
6 - 12 months	58 (37%)
13 - 24 months	10 (6%)
25 - 36 months	6 (4%)
Over 36 months	1 (1%)

N = 155

As the measurement of time, in months, represents a ratio scale, one way analysis of variance was used to assess whether any significant differences exist according to industry category or company size.

While virtually no difference existed among company sizes, as can be seen from Table 7.62 the "suspect time" is longer in industrial goods companies. The difference, however, is not statistically significant.

Table 7.62 The Differences in "Suspect Time" Among Industry Categories

	Average "Suspect Time" in Each Industry				
	A	B	C	D	E
Average Number of Months	18.1	22.1	21.0	26.6	24.3

Spearman's rho was computed to investigate the existence of associations between the "suspect time" and the precipitating circumstances. (See Appendix 19). As Table 7.63 shows, both "decline in market potential" and "competitive activity" are positively associated with the length of time the product has been under suspicion as a potential elimination candidate.

Table 7.63 The Relationship Between the Precipitating Circumstances and the Timing of the Decision

Precipitating Circumstances	Suspect Time	Timing Issues	
		Cease Production	Removal From Catalogue
Competitive activity	.21 ^a	.30 ^a	.27 ^a
New product development	.10	.14 ^b	.22 ^a
Decline in market potential	.22 ^a	.18 ^b	.22 ^a
Poor sales	-.13 ^b	-.24 ^a	-.03
Poor quality	-.18 ^b	-.00	.01
Poor fit with company image	-.13 ^b	-.01	-.02 ^b
Third party decisions	.01	.09	.13 ^b

a Significant at the 1 per cent level (sum of both tails)

b Significant at the 5 per cent level (sum of both tails)

However, poor quality is negatively associated with "suspect time". This suggests that competitive activity and declining market potential are not signals that are acted upon quickly, but that management can wait to see how events unfold before taking action. On the other hand, poor quality instigates serious consideration of a product's future more quickly.

In order to see if any differences exist with regard to the suspect time according to the PLC stage and dropclass, one-way analysis of variance was used.

As shown in Table 7.64, the length of time a product is suspected to be an elimination candidate, is much longer during the maturity and (especially) decline stages. That this is so is unsurprising - managers will, through experience, expect more problems during these stages of the product's life than at the other stages. However, given that 47 per cent of respondents felt that the product should have gone sooner, and over half of them were speaking of products in the decline stages, then perhaps the detection procedures in those companies are not as effective as they should be.

Table 7.64 The Differences in Timing Issues According to PLC Stage

Timing Issue	Average (mean) number of months for each stage				Sign.
	Introduction	Growth	Maturity	Decline	
Suspect time	15.7	12.8	21.7	26.7	5%
Cease production	4.0	3.1	8.2	7.4	NS
Removal from catalogue	5.4	3.5	8.2	7.4	NS

As Table 7.65 shows, the dropclass has little effect on the suspect time.

Table 7.65 The Difference in Timing Issues Among Dropclasses

Timing Issues	Average Number of Months for each Dropclass				Sign
	Item	Item	Range	Range	
	Elimination	Replaced	Elimination	Replaced	
Suspect time	21.6	18.0	22.3	26.1	NS
Cease production	3.5	7.2	5.6	10.7	5%
Removal from catalogue	5.0	6.4	5.2	11.3	5%

Turning to the length of time between deciding to drop the product and ceasing its production, a wide range of time spans is observed. (See Table 7.66).

Table 7.66 The Length of Time Between the Final Decision to Drop and Ceasing Production

Number of Months	Number of Products (%)
Less than 1	18 (12%)
1 - 5	63 (41%)
6 - 12	56 (36%)
13 - 24	13 (8%)
25 - 36	3 (2%)
Over 36	2 (1%)

N = 155

This time span is positively associated with "competitive activity" and "decline in market potential", but negatively associated with "poor sales". This suggests that once a decision is taken to withdraw a product because of poor sales, the cessation of production is fairly swift. On the other hand, managers give more time to the production rundown in the other two instances.

While there is no significant difference according to PLC stage, Table 7.65 shows that the replacement of a range involves nearly 11 months of preparation before production can cease, significantly longer than for the other dropclasses.

The final aspect of timing, the length of time between the decision and finally removing the product from the price list or catalogue is the longest of all. (See Table 7.67).

Table 7.67 The Length of Time Between the Final Decision and the Removal from the Price List

Number of Months	Number of Products (%)
1 - 5	8 (5%)
6 - 12	63 (40%)
13 - 24	49 (31%)
25 - 36	17 (11%)
Over 36	19 (12%)

N = 156

This duration is positively associated with "competitive activity", "new product development" and "decline in market potential" when it appears there is no rush to remove the product from the catalogue. There is little difference in this time span according to PLC stage, but once again, when a range is to be replaced there is a significantly longer delay than with other dropclasses.

Taking the duration of the entire elimination process, from the time management first suspected the product to be an elimination candidate, through to the end of its production, some interesting differences come to light. Firstly, for those mature and declining products the process is generally longer (see Table 7.68).

Table 7.68 Differences in the Length of the Product Elimination Process According to PLC Stage

Average Duration (months) for each PLC Stage				
Introduction	Growth	Maturity	Decline	Sign.
20.0	15.9	29.9	34.2	5%

Similarly, there is a significant difference among the dropclasses. The replacement of an entire range has a significantly longer duration than any other of the dropclasses See Table 7.69.

Table 6.69 Length of the Product Elimination Process According to Dropclass

Average (mean) duration for each dropclass				
Item Elimination	Item Replaced	Range Elimination	Range Replaced	Sign.
25.2	25.4	28.3	36.8	5%

7.7 Summary

This chapter has presented the findings of the mail survey stage of the study. Elimination behaviour was investigated at two levels: at the company level and at the level of the specific deletion decision.

The first four sections dealt with elimination behaviour at the company level, investigating research issues generated at the interview stage of the survey. Specifically described were strategic planning, product planning, recognition criteria and implementation strategies and factors.

7.7.1 Strategic Planning

Strategic planning was investigated by examining whether or not companies formulated long-range plans, the time horizon of such plans and by measuring the relevance of ten inputs to the strategic planning process, called "strategic issues". A correlation matrix confirmed the pattern of interrelationships among the strategic issues found during the interviews. Three sets of highly related issues emerged, which were entitled finance issues, growth issues and marketing issues. The growth issues were seen to have a mild, positive impact on the percentage of products replaced by a company, although the findings are not unequivocal and require further investigation.

In addition, a positive association emerged between a strategy of product-market rationalisation and three strategic issues; long-term investment, company image and new product development.

Finally, of the 156 specific deletions described, 76 (49 per cent) were considered to have been executed as part of overall product-market strategy.

7.7.2 Product Planning

Product planning in the sample companies was studied by asking open-ended questions about the mechanisms and issues considered relevant by the respondents. Product planning frequently connoted "new product development" in the minds of respondents. Although tentative, analysis of the relationships between strategic and product planning, leads to the hypothesis that companies emphasising market-based growth and development encourage mechanisms for product planning and new product development giving rise to a greater propensity for product replacement and deletion.

The study could not ascertain those types of elimination dealt with at the annual planning level and those dealt with under the jurisdiction of control activity.

7.7.3 The Identification of Product Elimination Candidates

The relative importance of 15 recognition criteria derived from the interview survey was estimated. Their importance was seen to vary according to the relevance of the strategic issues. Specifically, emphasis of strategic finance issues enhances the importance of three financial recognition criteria: batch sizes, stock levels and market share. Emphasis of strategic marketing issues enhances market share, market growth rate and profit margin. Now needed is an estimation of the "effectiveness" of the criteria in signalling product elimination candidates, with a view to recommending the strategic emphases to be adopted to enhance the efficiency of the detection of elimination candidates. Moving to the way in which the recognition criteria relate to the precipitating circumstances, the data show a large number of associations, although they are somewhat weak.

7.7.4 The Implementation of the Decision

The fourth aspect of elimination behaviour examined at the company level was the implementation of the decision. Both implementation factors and strategies were investigated. Differences according to industry and size categories were highlighted, and the effect of the strategic issues on the implementation was studied by means of a correlation analysis. No significant influence was found.

7.7.5 The Product-Specific Factors of the Deletion Decision

The description of product elimination behaviour at the level of the specific deletion began with details of the eliminated products chosen by the respondents. Approximately two thirds of the deletions were ranges (as opposed to items) and about half were completely eliminated (as opposed to replaced). Only one third of the products were eliminated during the decline stage of their life cycles.

The decision-making process was examined in the light of the product's stage in its life cycle curve and with respect to its

"dropclass". The dropclass is a four-way classification combining the "level" of the product (item or range) and type of decision (complete deletion or replacement).

The circumstances causing the product to be considered for elimination comprised the second group of product-specific factors. Differences in the precipitating circumstances among industry and size categories were described, and the interrelationships among them resulted in four sets: crisis circumstances, external circumstances, strategic circumstances and product development circumstances.

The strategic issues were seen to influence slightly the importance of the various precipitating circumstances, but a greater influence appears to be exerted by the stage in the PLC and dropclass.

Similarly, many recognition criteria were shown to be associated with several precipitating circumstances.

7.7.6 The Revitalisation of Elimination Candidates

The revitalisation of elimination candidates was examined by studying which types of corrective action were considered and which were actually adopted. Significant differences were apparent among industry categories.

The interview findings were largely confirmed with regard to the effect of the precipitating circumstances on the revitalisation stage of the decision, although a greater number of associations were picked up by the quantitative (mail survey) analysis than by the qualitative (interview survey) analysis.

In addition, differences in the revitalisation methods considered for products at various stages in their PLCs were found. Similarly, differences in the revitalisation routine among dropclasses were highlighted.

7.7.7 The Evaluation of Elimination Candidates

In appraising the evaluation stage of the decision described by the interview respondents, it became apparent that this stage was highly complex, depending on the product in question, and its circumstances. This observation was confirmed by the mail survey, where a large number of the evaluation factors were associated with the precipitating circumstances. However, some easily interpretable differences in behaviour were detected among products at various stages in their PLCs and among the dropclasses.

7.7.8 The Implementation of the Decision

The implementation behaviour of the company was also examined at the product-specific level. Again, the differences in implementation strategy mirrored the findings generated by the interviews. The precipitating circumstances were also seen to influence the choice of strategy, and the choice was also contingent upon the product's stage in its PLC curve and the dropclass.

A second feature of the implementation investigated at the product-specific level was the timing of the deletion. The timing of deletions was found to depend on the precipitating circumstances, PLC stage and the dropclass.

7.7.9 Conclusion

In conclusion then, the research issues raised from the analysis of the interview transcriptions have been thoroughly examined at the mail survey stage. Not only have we established the variation in behaviour among industry and size categories, the extent and nature of the variation has been described.

Important associations between a company's strategic orientation and its broad approach to product elimination have been uncovered. This is a particularly interesting and fruitful area for research. The research in hand could not fully exploit this theme because behaviour was measured at both the general and specific levels.

Future attention paid to either levels would greatly advance knowledge in the field.

Finally, and for the first time, an indication of the extent and nature of the influence of product-specific factors on the elimination decision have been described.

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CHAPTER 8

Conclusions, Implications and Recommendations

8 Conclusions, Implications and Recommendations

8.1 Introduction

This study has focused on a range of organisational behaviour related to the detection, analysis, revitalisation, evaluation and/or withdrawal of product elimination candidates.

Its dual purpose was to extend knowledge of the product elimination process beyond the limits of sectoral descriptions and to describe those company- and product-specific factors that influence the process.

In meeting these objectives, it has participated in building empirically-based knowledge of product elimination and it has suggested a range of factors for managers to incorporate into their own product elimination deliberations.

This chapter summarises the study and its findings, draws conclusions, points out implications for both practitioners and academics and evaluates the limitations of the work.

8.2 Origin and Objectives of the Study

The original motivation for the research lay in two related sets of factors. The first of these was that as the economic, competitive and technological environment becomes increasingly turbulent, attention to the evolution of the product mix becomes vital. This said, the evolution of the product mix includes rather neglected areas such as product revitalisation and pruning the range - something which has been receiving increasing attention in managerial circles (Rapoport 1984, Cotton 1982, The Financial Weekly 1986). To sum up, theoreticians have not responded with the kind of information that the economic environment appeared to call for and which writers involved with practising managers have highlighted.

The second was that, given the writer's interest in the subject, she was given a unique opportunity to study it at the Department of Marketing, Strathclyde University, by working on Project "Dropstrat", a wide-ranging project funded by the Leverhulme Trust.

After reviewing and appraising extant literature on the subject, four important gaps were detected.

- 1 The most complete analysis of product elimination decision-making behaviour was confined to engineering sectors of industry
- 2 While the impact of competition, technological change, operations technology and company size on decision-making behaviour had been studied, none of the fundamental aspects of strategy had been examined in this respect
- 3 Similarly, a good deal of evidence unearthed by Avlonitis (1985) and Salerno (1983) suggested that a number of product-specific factors were important to the explanation of behaviour, although these were not formally investigated
- 4 Assumptions abounded regarding the "position" or "setting" of the elimination decision vis-a-vis other managerial decisions, but little evidence was available to confirm or infirm such assumptions.

In view of these gaps, seven specific aims were identified. They are as follows:

- 1 to describe the content of the product elimination decision process across British manufacturing industry,
- 2 to describe differences in the decision's content among industry sectors,

- 3 to describe the range of precipitating circumstances that cause companies in British manufacturing industry to consider eliminating products,
- 4 to relate these precipitating circumstances, and explore any other relevant product factors, to the content of the decision process,
- 5 to explore and describe the various product planning mechanisms and forums where elimination candidates are identified,
- 6 to describe issues relevant to British manufacturing industry's strategic planning,
- 7 to relate these strategic issues to product elimination behaviour.

8.3 Research Method

In developing a research design, it was decided to combine both qualitative and quantitative methods to maximise their strengths and minimise their weaknesses. This kind of combination has been called "triangulation" (Denzin 1978, Campbell and Fiske 1959).

Focused interviews were chosen as the optimal qualitative method for providing insights into the complexities of product elimination behaviour which could be used to construct a valid test instrument for the quantitative part of the study.

Two schedules were used: the first to elicit full descriptions of the company's strategic and product planning, as well as its general approach to product deletion; the second to focus attention on a recently-eliminated product.

A total of 31 companies participated in this stage, and 50 specific elimination case histories were described.

The quantitative stage of the research took the form of a mail questionnaire. The questionnaire contained questions and sections relevant to both the work in hand and to the wider study, Project Dropstrat. After pre-testing in five local companies and re-working the questionnaire as a result, the final document was mailed to 903 companies across British manufacturing industry, listed in Kompass and Dun and Broadstreet's Key to British Enterprises. A response sample of 166 companies (18.4 per cent) was achieved, with no detectable non-response bias.

The mail survey findings largely consolidated the interview survey findings. A combination of non-parametric and parametric statistical models was used: chi square test of significance, the Mann-Whitney U-test, Kruskal-Wallis one-way analysis of variance, the F-test, Spearman's rank order correlation and Pearson's product-moment correlation.

8.4 Summary and Synthesis of the Findings

This section of the chapter recapitulates the findings from both the interview and the mail survey. As the findings have been summarised at the end of relevant chapters and in the interests of concision, the discussion that follows does not go over the descriptive results with respect to differences in behaviour among industry and size categories.

8.4.1 Strategy and Product Elimination

Both phases of the research showed that the majority of companies did formulate strategic plans and that the inputs into the plans largely fell into one of three domains: marketing, finance and growth. They are not discrete groupings and individual strategic issues can be categorised logically and statistically into more than one domain. For example, forecasting technological change is logically central to the entire planning process; from the development of the product mix (marketing and growth) through to planning the necessary R and D expenditure (finance), to installing new

plant for more efficient production (growth and finance). Intuitive propositions such as these are confirmed by the high number of significant correlations between forecasting technological change and many of the other strategic issues.

No conclusive evidence emerged to confirm the interview findings that suggested a link between strategic marketing issues and a reluctance to drop products. However, the tentative relationship between growth issues and product replacement was confirmed by the quantitative analysis, as growth (and marketing) issues were positively associated with the number of products replaced. Corroboration is provided by the negative association between growth and marketing issues and the life span of deleted products, showing that the more attention given to growth and marketing issues the greater the propensity to eliminate weak products early in their life cycle. From the interview findings we concluded that, while growth issues can enhance product replacement, in some instances there is a "pressure to keep the dollars up".

The interviews showed that 26 per cent of deleted products were dropped as part of an overall product market strategy. The mail survey findings showed that 49 per cent of deletions were considered part of overall product market strategy.

8.4.2 Product Planning and Product Elimination

Most of the information about product planning was generated by the interviews, since there was very little generalisable information in extant literature that could be used to develop valid closed questions for the mail survey.

Two types of planning were described: the annual operational planning process and the control of the plans by regular and frequent review procedures. Elimination decisions were taken in the former context where they were linked to new product introductions or range rationalisation. The more usual venues for elimination decision-making were the control mechanisms.

The mail survey showed that the term "product planning" connoted new product planning in the mind of the respondents.

New product planning was positively associated with strategic growth issues, which illustrates the internal consistency of the data.

8.4.3 The Recognition of Product Elimination Candidates

The analysis of the interview transcriptions revealed that the use of product goals and minimum standards of product performance are not as common as normative theory might indicate. On the other hand, alternative measures of performance were used, which we entitled "review criteria". These review criteria were the issues discussed at the control meetings described above. A total of 15 were described.

Both the interview and mail survey analyses showed that the strategic issues influenced the importance of different kinds of review criteria. Specifically, strategic finance issues were positively associated with review criteria which had a direct and visible impact on liquidity: batch sizes, stock levels and market share. Strategic marketing issues were positively related to review criteria of the type suggested in marketing textbooks, such as market share and market growth rate.

Similarly, the recognition (review) criteria were associated with different kinds of eliminations (as defined by the precipitating circumstances). The associations were detected by both the

interview and the mail survey analysis. For example, products dropped due to new product development were associated with review criteria like the product's position on its life cycle curve, future sales, market share and competitive activity. Products dropped due to poor quality were related to operational problems, market share and market growth. Where products were dropped because company resources were required elsewhere, the accompanying review criteria were more internal: stock levels and sales versus resources utilised.

8.4.4 The Circumstances of a Specific Deletion

From the evidence available in extant work, together with the first round of interviews, it became apparent that product-specific factors influenced the nature of the decision. Indeed, uncovering the dimensions of these factors was a major objective of the research.

Although ideas for these dimensions and their measurement were taken from the interview survey stage, they were only formally introduced in the presentation of the mail survey findings.

Firstly, we looked at the "level" of the products eliminated by companies; were they items or ranges? Of the specific deletions chosen by respondents 62 per cent were items, 38 per cent were ranges.

Secondly, the amount of sales volume accounted for by the deleted products at the time of the deletion was investigated. The average was 7 per cent, but as this was significantly related to whether the product was an item or a range, the range/item issue was used as a surrogate measure of the sales volume accounted for by the product.

Thirdly, whether or not the product was replaced was examined, as this was expected to have implications for the after-effects of the

elimination. 56 per cent of the specific deletions were completely eliminated, 44 per cent were replaced. In order to promote concise analysis, the questions of "item or range" and "replaced or dropped" were transformed into a single measure of "product importance". Based on the thinking behind the buyclass in the literature on organisational buying behaviour, the dropclass matrix was developed. The first category of dropclass (DC1) described the complete elimination of an item, accounting for 22 per cent of the eliminations described by respondents. The second category (DC2) represented the replacement of an item, describing 16 per cent of the eliminations. The third class (DC3) represented the complete elimination of a range, accounting for 34 per cent of the case histories. The final category, (DC4), the replacement of a range, accounted for 28 per cent of the described deletions.

Fourthly, the product's position on its life cycle curve was studied, showing that 10 per cent of eliminations occurred at the introduction stage, 10 per cent at the growth stage and 33 per cent and 47 per cent at the maturity and decline stages respectively.

Equally relevant to an adequate description of the circumstances of a specific deletion are the triggers setting the entire elimination process in motion. A total of 17 triggers (or precipitating circumstances) were described during the interviews and classified into five "types" of elimination: those carried out due to poor sales and/or profits, which are called "crisis" eliminations; those carried out due to coercion by external forces; those carried out as direct results of company policy (the introduction of a rationalisation programme or a strategic move out of certain product-markets); those carried out as a result of new product introductions and finally the unsuccessful new product. This classification was largely confirmed by an analysis of the precipitating circumstances' inter-relationships.

The construction of the mail survey questionnaire precluded accurate and full measurement of the effect of strategy on the triggers, although some findings did back up the associations detected during the interviews. More specifically, the trigger "resources required elsewhere" is positively related to strategic financial issues. New product development as an elimination trigger is positively associated with strategic growth issues, further supporting the internal consistency and quality of the data.

The interview data also suggested associations between variety reduction and strategic financial issues, declining market potential and strategic marketing issues and between a poor fit with the company's image and strategic marketing issues.

Some differences in the precipitating circumstances were observed according to the stage of the product in its life cycle. Operational problems and poor sales were most common in the introduction and growth stages of the PLC, competitive activity was most important at the maturity stage while declining market potential was most important at the decline stage.

No differences among dropclasses were observed with respect to external triggers, but where ranges were entirely eliminated (DC3), the most important triggers were financial: resources required elsewhere and poor profit. In such instances product elimination was used as a solution to problems of opportunity cost and lack of profits. On the other hand, where a range was replaced, the most important triggers were poor quality and new product development.

Finally, it would be unlikely that the precipitating circumstances would make themselves felt over a short period of time. The analysis of the relationships between the triggers and the length of time the product was suspected to have been a product elimination candidate, revealed several differences. Products

dropped due to competitive activity or declining market potential were generally under suspicion for longer periods, while those deleted (or replaced) due to poor quality were suspected of being elimination candidates for shorter periods of time.

8.4.5 The Revitalisation of Product Elimination Candidates

During the interview phase of the study, the diagnostic routine was examined. A total of 16 diagnostic issues were described by respondents as useful in analysing what was wrong with a particular product. This said, it was clear that the diagnostic routine was reserved for products that were performing poorly. Where products were considered for elimination as part of a variety reduction policy, or to make way for alternative projects, little diagnosis took place.

The revitalisation of products was examined at both the interview and mail survey stages of the research. The 18 methods of revitalisation were seen to vary in their applicability according to the original circumstances precipitating the decision. Where a product was experiencing poor sales, a wide variety of corrective measures were considered; particularly popular was an increase in effort by the sales force. Where the quality of the product was dubious, the obvious measure of "quality improvements" was commonly chosen. On the other hand, the product due for deletion because of the introduction of a new product, would frequently undergo a decrease in price before being taken off the range.

The product-specific factors also accounted for differences in revitalisation behaviour. Products in the introductory stages of their life cycles, were most likely to be withdrawn from some markets, while for those experiencing difficulty in the maturity stage, a price increase was a popular course of action.

Similarly, the dropclasses were treated differently with respect to revitalisation. Where a range was to be replaced, it was usually preceded by a consideration of quality improvements, whereas the replacement of an item followed consideration of its modification.

8.4.6 The Evaluation of Elimination Candidates

The evaluation stage is essentially concerned with deciding to keep or to drop the product, based on the likely impact of the choice. The interview survey revealed 19 factors of relevance to this stage of the decision.

Associations between the importance of these factors and the precipitating circumstances were found at both the interview and mail survey phases of the research, although the vast number of associations (and the intervening product-specific variables) hampered the tracing of any patterns.

Where a product was being dropped because resources were required for alternative opportunities, the evaluation centred on the reallocation of resources and executive time to those opportunities, and also on the implications of the deletion on working capital associated with that product. In those cases where poor profits caused the product to be dropped, reallocation of resources was again an important consideration and the negative associations showed that the availability of a new product and that product's contribution to overheads were of little importance.

Where a product was at the introductory stage of its PLC, the reallocation of executive time was important. For mature products, many of the classic evaluation factors were highly important: they include, the product's contribution to a product centre, the effect of withdrawal on the company image, the competitive reaction and the effect on customer or trade relations.

Where products were to be replaced, the availability of the new product, the interchangeability of parts and competitive reaction were emphasised. On the other hand, where products were to be dropped completely, the reallocation of resources and executive time were key considerations, especially for ranges.

8.4.7 The Implementation of the Elimination Decision

The issues impinging on the implementation of the decision, together with the actual methods of "killing" a product were examined by the research. At both stages, the method of implementation was seen to vary with the precipitating circumstances. For example, where a product was to be dropped due to declining market potential, the most common method was harvesting, phasing out the product over a long period of time to reap maximum profit. On the other hand, a product whose profits were poor would be dropped immediately.

During the interview it was possible to probe the extent of formality in the implementation stage. Half of the sample companies used a plan to aid the implementation. These plans varied in complexity from a simple checklist to a full timetable.

At the mail survey stage of the research it was found that in the decline stage of their life cycles, products were generally phased out immediately.

A further aspect of the implementation was examined at the mail survey stage of the research: the timing of the deletion. Two separate measures were used: the time between taking the decision and ceasing production and the time between ceasing production and removing the product from the catalogue or price list.

A little over half (53 per cent) of the companies ceased production within five months of deciding to drop it, a further 36 per cent stopped production within a year.

Products dropped due to competitive activity tended to be produced for longer periods of time after the decision to drop, as did those deleted due to declining market potential. Conversely, products dropped because of poor sales tended not to be produced for very long after the decision was taken. Where ranges were replaced, the final runs were considerably longer than with other dropclasses.

The second timing measure runs from the time production was stopped until stocks of finished goods ran out and the product was removed from the catalogue. This period of time seemed, on the whole, to be rather longer than the other. Only eight per cent of companies removed the product from the price list within 7 months of ceasing production. A further forty per cent did so within a year. Over twenty per cent of companies took longer than two years to remove the product from the portfolio.

Products dropped due to competitive activity, new product development and decline in market potential stayed on the company's books for longer periods of time. Again, the replacement of ranges took considerably longer than the other dropclasses.

Finally, an estimation of the entire process was made by measuring the length of time management suspected the product of being an elimination candidate, and the two timing issues described above.

Those eliminations taking the longest time were those carried out due to competitive activity, new product development and declining market potential. Those carried out most quickly were triggered by poor sales, poor profit, poor quality and poor fit with company image.

In general, the older the product, the longer the decision, while the replacement of ranges was the dropclass taking the longest time.

8.5 The Managerial Implications of the Study

Perhaps the most significant contribution of this study to management practice is that it has described and analysed what a cross-section of manufacturing companies do when eliminating products. The managers involved can find in our analysis a number of decision criteria and factors that can help them to reflect upon their own practices and consider alternative policies.

The respondents at the interview stage of the study emphasised the complexity of the decision which stemmed from the considerable paradoxes implicit in the product elimination problem. A detailed description of these complexities across different types of firms should allow managers to gain a wider perspective than is possible working in one company and its concomitant commercial environment.

Clearly, there is a question mark over the effectiveness of the entire elimination process, given the delay in identifying elimination candidates, coming to a final decision and the length of time discontinued products are on the market. Naturally, it is dangerous to assume that increased efficiency in product elimination is evidenced by speedy execution, since very real issues like work in progress, the amount of stock in hand, customer relations and the need to build a stock of replacement parts influenced the timing. Where such issues are important, the duration of the decision cannot be used to measure managerial effectiveness. It may even be that the shorter the time taken, the more the decision is as the result of a crisis, itself causing write-offs of stock and materials. This said, there was a general protraction to many of the decisions that could not be accounted for by these practicalities, suggesting that inertia and procrastination play a large role in the decision process. Managers need to recognise this tendency and learn to differentiate between those deletions which need time to be fully considered and those which become unnecessarily long through indecision and hesitation.

Before drawing more implications from the research findings, it is necessary to situate the product elimination decision in perspective. In describing the decision in such detail, under a spotlight of research attention, there is a tendency to over-emphasise the importance of the decision. Further, when the misgivings of the managerial procedures are brought to light, there is an urge to evangelise the cause, to encourage managers to consider the decision strategically, make policy explicit and formulate controls of the entire process! However, the author resists these temptations and makes the following recommendations recognising the tactical emphasis that the product elimination decision is, and should be, given.

The discussion that follows is based on the observation of behaviour at two organisational levels: general elimination behaviour and behaviour regarding specific deletions. The former is dealt with first.

First, the investigation into strategic planning and the number of deletion decisions tends to suggest that, while an emphasis on growth issues through the development of new products enhances the number of replacements, growth based on increased volume sales of existing products may well eclipse the issue of product elimination. While this can be appropriate for a given company at a given time, managers should be careful that such an orientation does not over-emphasise current products and markets to the detriment of continual reappraisal and renovation of product-market strategy to meet changing market demand and competitive activity.

Second, where growth through new product development is evident, appropriate mechanisms are common, giving the organisational back-up needed for this vital activity. Recognising the need not to confuse cause and effect in this respect, where product planning (or new product planning) forums are instituted, an orderly and structured approach to deletion can be adopted, resulting in more

of the strategy-derived decisions: those taken as part of a variety reduction policy, or through product renewal and replacement and because of the products poor fit with the company image.

Third, the study has shown that there is considerable latitude in the operation of product goals and minimum standards, which often do not function adequately in alerting managers to deviant products. While, in some instances, there may be good reason to override the organisation's warning signals, the aggregate tendency shown by the interview data suggests that fuller managerial attention should be paid to the role of product goals and minimum standards.

Fourth, both the interview and mail survey findings show that different strategic inputs result in an altered importance of review criteria. Emphasis of strategic finance issues is accompanied by a greater importance being placed on the financial review criteria, notably those criteria which underline the opportunity cost represented by a proliferation of products. As marketing is concerned with the generation and maintenance of healthy products, currently and for the future, it is recommended that the financial review criteria be incorporated into the appraisal of products.

Fifth, the kinds of elimination generally carried out as part of overall product-market strategy, (variety reduction, new product development, resources required elsewhere) are associated with a number of the "less popular" recognition criteria: the product's position on its life cycle, stock levels and market share. In addition, they are negatively associated with one of the most popular review criteria: past sales volume. If past sales volume is not a good indicator of what strategic changes should be made to the range, then it is recommended that management incorporates those review criteria mentioned above, which open a window onto the future.

Turning to the product-specific behaviour, a number of implications are underlined.

First, the interrelationships among the precipitating circumstances show that there are indeed different reasons for dropping products, and that not all deletions occur as the result of weak sales and/or profits. Traditionally, it has been the poor sales/profit deletions that have received attention, and much of the research into these decisions has concluded that existing procedures are inadequate and should be tightened up. However, the current study has shown that managers are generally quite happy to say that products whose sales and/or profits were poor, should not necessarily have been deleted sooner. Set against this factor, is evidence that in the cases of poor sales and profits, the length of time the product was suspected of being deviant was considerably longer than in other instances. One question, therefore, that managers should ask themselves (as should academics) is "do I believe the product should have gone sooner because they are experiencing post-elimination dissonance?" The same question needs to be asked for products dropped due to a poor fit with company image and a variety reduction policy, for the same reasons.

Second, in the case of eliminations due to new product development, the time the product is suspected of being elimination candidate is short, but the elimination can be rather protracted. This is to be expected given the mechanics of phasing. Where products are dropped because resources are required elsewhere, the opposite is true: the "suspect time" is longer, but the implementation is swift. These findings suggest that attention should be paid to the phasing of new products and to tighter scanning of opportunity cost factors where resources are tight.

Third, in the case of an active variety reduction policy, there is a tendency to think that the product should have gone sooner. However, as there is little analysis of revitalisation with these products, we conclude that the time is spent evaluating, deciding and implementing. As variety reduction is an important strategic alternative, perhaps it is time for strategic changes to help at operational levels in setting down policy to guide the evaluation and implementation.

Fourth, given the different triggers according to various stages of the PLC, it is suggested that certain threats are more apparent at some stages than at others, a fact which managers could use to improve the detection of elimination candidates. For example, the early PLC stages are more likely to be plagued by operational problems, while during maturity, a bigger threat is posed by competition. Special attention could be paid to these factors at these stages in a product's life. In the case of competitive activity, prevalent in the mature stages of the PLC, this could allow managers not to build up the high stock of parts or ingredients which could cause the long delays between deciding to drop the product and ceasing its production.

While some of these implications are quite detailed, it is reiterated that the cross-sectional catalogue of 206 elimination decisions should provide managers with food for thought, which will allow them to evaluate and perhaps modify their own elimination activities.

8.6 Theoretical Implications of the Study

8.6.1 Product Elimination Theory

The study in hand has largely confirmed the experience of recent researchers such as Salerno (1983), Avlonitis (1980), Gauthier (1985) and Hise, Parasuraman and Viswanathan (1983) in showing that the normative view of product elimination behaviour is not representative of management practice.

This is understandable, since few, if any, of the "how-to-eliminate" papers were based on real-world practice, many were distilled from a "logical" and deductive approach to the problem, which can ignore constraints such as uncertainty, risk and non-task behaviour. We contend, therefore, that managers feel somewhat alienated from the rather pat procedures put forward by Kotler (1965), Hamelman and Mazze (1972) or Wind and Clayclomp (1975).

This should lead theoreticians to question their previously-held assumptions about the nature and consequence of product elimination, so that their theory could be modified, if necessary, to make it more relevant to practising managers. Indeed, if theory is to help managers make these decisions, then it will have to take cognisance of the major erroneous assumptions implicit in it. Paragraphs 8.6.2 to 8.6.4 detail these assumptions.

8.6.2 The General Approach to Product Elimination

Inherent in many papers on product deletion is the attitude that "the more products are deleted, the better". Our findings show that the amount (and nature) of product deletion is dependent upon what a firm is trying to achieve in a given commercial environment. Specifically, the elimination decision is influenced by the industry context of the firm, as well as by its strategic orientation. This said, researchers should recognise that, in some industries elimination may not be such a desirable activity and that in others it has become so essential and obvious an activity that it is dealt with on a continuous, no-fuss basis. An example of the former are the fast-moving consumer goods companies that need to keep products in the range for trade (shelf space) reasons, while an example of the latter are the consumer durables companies that need to have a continual product replacement programme to keep up with changing

taste and fashion. These consumer durables companies develop products with so many common parts that the move from one product to another is simplified in many respects.

8.6.3 The Scope of Product Elimination

Implicit in much work about product elimination is the notion that it is entirely reserved for old breadwinners or dogs. While it may well be the case that products are intended to move through the stages of the PLC and be removed finally at the end of the decline stage, our findings show that any number of unforeseen situations may force management to consider abandoning a product before it reaches that stage. In building up relevant product elimination theory, it is necessary to provide for those situations that do not conform to the "mature/weak product" scenario. This is particularly important since the procedures used and the factors considered in the evaluation of an elimination candidate are influenced by the circumstances triggering the entire process.

8.6.4 The Importance of Product-Specific Factors

Very few writers of either the normative or empirical ilk have considered the critical influences on the decision of factors specific to the product. Much of the theory does not differentiate procedures for the removal of an item in a range from those which might be more applicable to the removal of an entire range. Our findings show that there is a considerable difference in the way a decision is handled, depending on whether it is an item or a range. As normative theory has ignored this difference to date, it runs the risk of being written off as inapplicable to certain instances managers find themselves facing. By incorporating this factor (and the other product-specific factors, such as whether or not the product is to be replaced, its position on the PLC curve, and so on) into the theoretical framework, the validity of the theory will be enormously enhanced.

Taking the product-specific factors together with the precipitating circumstances, there is a clear argument for the development of typologies of product elimination decision which could be at once descriptive and prescriptive if related to various decision outcomes. This said, theoreticians might be in a position to make empirically-based recommendations of how best to tackle the decision in different environments and under different operating methods.

8.6.5 Marketing Strategy and Tactics

In recent years, much concern has been voiced about the need for marketing academics to turn their attentions to the interface between corporate strategy, marketing strategy and tactics (Anderson 1982, Wind and Robertson, 1983, Kay and Diamantopoulos, 1986) Marketing theory has been criticised for being dominated by a "marketing management" perspective which is concerned with the design of the marketing programme to the detriment of "marketing strategy", which focuses on the quest for long-run competitive and consumer advantage. Cravens (1986) emphasises the need to understand an organisations strategic situation as a starting point for marketing management. He believes that:

"strategic marketing decisions regarding selection of market targets and positioning strategy (product, distribution, price and promotion) should be guided by the existing strategic situation and estimated future trends".

Gluck, Kaufman and Walleck (1980) also suggest that a strategic emphasis, linking the rigour of formal planning to vigorous operational execution, is the key to improving competitiveness.

Both Day (1985) and Gray (1986) emphasise the interdependent relationship that exists between strategic planning and the organisational implementation of strategic plans. The implementation of corporate strategy is dependent upon the willingness and ability of production, sales finance, marketing and other company functions. (Turnbull and Valla 1986, Spillard 1987)

This neglected interface is further obscured by the fact that, while there is a good deal of abstract writing about marketing strategy, comparatively little has been said of the components of marketing strategy and planning as they exist in British industry (Shipley 1985).

The work in hand has contributed to this identified area of neglect in two ways. Firstly, in describing the issues of relevance to strategic planning, it has suggested some important dimensions in manufacturing companies' strategic thinking. As they were generated from the interview findings, they can be (and have been) used as a basis for the investigation of company strategy (Black and Baker 1986).

Secondly, through the investigation of the impact of these strategic issues on the content of the product elimination decision we have confirmed and documented aspects of the link between company strategy and one tactical decision: the product elimination decision. Dimensions of this link could and should be further researched, not only in relation to product elimination, but also in respect of other tactical decisions. This is important to the development of the discipline of marketing as a whole to rectify the fact that, while the marketing concept is intended as a general philosophy of business, it has often been translated into a rather narrow, functional orientation (Doyle 1987, Webster 1981, Wensley 1981).

8.7 Limitations of the Study and Suggestions for Future Research

The nature of the current work has been to replicate Avlonitis' work across a wider range of manufacturing industry, and to explore and focus on those factors within the firm that influence product elimination decision-making behaviour. As such, it has taken the form of an extensive, cross-sectional study, rather than a focused, in-depth investigation. As a result, there are limitations in the

method, the content and the findings. These are now pointed out, together with recommendations for future research, born of the benefits of hindsight.

8.7.1 Limitations of the Research Method and Suggestions for The Future

As was outlined in Chapter 5, survey research, upon which this study is based, is plagued by the whims of self-reporting. Although for general studies of this nature it is felt that researchers will still have to rely largely on this method, with much of the general descriptive groundwork completed, it is now possible to focus on narrowly-defined areas in smaller conceptual populations. For more specific work of this nature, a more longitudinal approach, perhaps comprising the testimonies of more than one participant in the study, would perhaps extend knowledge and understanding in a new direction.

Further, for researchers wishing to carry out a sectoral study, there is much greater opportunity to estimate the population size, and to use an accurate up-to-date sample frame than with the cross-sectional approach needed for this study.

The considerable amount of description of elimination provided by both the interview and mail survey should enhance the validity, reliability and measurement qualification of future research instruments. Specifically, open-ended questions of the kind used in the mail survey to investigate product planning should be converted to more direct, specific and detailed questions.

Greater attention should also now be paid to the measurement of the importance of the precipitating circumstances, in particular, to produce data more amenable to parametric statistical analysis. Refinements such as these were not possible in the current work because of the nature of the research, the state of knowledge at the time and space restraints on the questionnaire.

8.7.2 Limitations of the Data Analysis and Findings and Suggestions for the Future

One of the major drawbacks of an extensive work such as this is the possibility of data overload. This is felt to have been the case, especially in relation to the mail survey.

In future work, where the focus is more intensive, then the analysis and resultant findings can be more parsimonious.

Compounding the problem in the current study was the fact that, due to the nature of the data, there was little possibility of reduction through factor or regression analysis. This was due to two factors. Firstly, the test instrument provided a measurement vehicle not only for this study, but also for the wider Project Dropstrat. This imposed time and space constraints on the scales and questions used. Secondly, although the assumption of normal distributions can be (and often is) violated, it was decided that, while there may be a slight problem of too many findings, this was preferable to making bold assumptions about the validity of reduced data in a field where we are only beginning to understand the forces at play. Now, with full reporting of the interrelationships given in this thesis, the future researcher can take the necessary preparatory steps to ensure that data at least approximates to normality so that reduction will not result in loss of information or extensive type I errors.

8.7.3 Limitations of the Research Content and Suggestions for the Future

Due to the broad approach taken by the researcher and because of the limitations imposed as a result of executing the research in tandem with a wider study (Project Dropstrat), a number of potentially interesting subjects were omitted. These could be incorporated into future work.

First, the current study was limited to manufacturing industry. However, an increasing section of the British economy is made up of service industries where companies introduce and withdraw facilities for their customers. To our knowledge, there is virtually no research on elimination to which managers in service industries could turn for guidance.

Second, although the current study has begun to describe some of the effects of strategy on the product elimination decision, not all aspects of strategy have been examined. A starting point could be the nature and existence of long-term objectives, suggested by that literature viewed in Chapter 2 as having an effect on the product elimination decision.

Third, an emerging trend in management literature is the influence of non-task factors on organisational behaviour (Peters and Waterman 1982, Dunn, Norburn and Birley 1985). The current study did not investigate the influence of non-task behaviour on the product elimination decision, and this clearly represents a gap which could be filled by future researchers in the field. Topics of potential interest include: managerial attitudes and style, organisational values and expectations, shared beliefs and expectations and the many issues subsumed under the heading of corporate culture.

Fourth, the study has elected to focus on the entire elimination decision, this has precluded an in-depth investigation of each particular stage in the decision. Conceivably, a deep examination of any one of the four decision stages would improve understanding and help the development of models on how to detect elimination candidates, how to evaluate them, revitalise or drop them. However, from the literature and the concerns expressed by interview respondents, we would contend that it is the analysis and revitalisation stage with all its implications for marketing information that requires more intense investigation by researchers.

Fifth, the current work has omitted any attempt to assess what a "good" or "successful" elimination might be. Only when this has been defined and related to alternative decision-making procedures and variables, will we truly be able to make recommendations to managers as to how best to carry out the decision. Although Avlonitis (1986) has made a start in this direction, greater exploration, description and replication is required to build up a complete picture of the success dimension. In addition, wide-ranging quantitative studies need to be fully backed by depth qualitative investigation to enhance the validity and interpretation of the findings.

Sixth, another performance-related aspect has been left unexplained by the current work, namely the contribution of elimination decisions to overall company performance. Although it is difficult to attribute performance to any one isolated decision, perhaps an approach which focused longitudinally on range decisions would empirically reveal the extent of the benefits (if any) to be gained from paying attention to the marginal products and pruning them systematically.

8.8 Discussion

The kinds of studies mentioned above are only a few of the possible areas which the researcher felt would enhance knowledge in the area, as she brought the study to a conclusion. The current work helps extend our knowledge of what is currently happening across the British Manufacturing industry.

However, the orientation of future research should turn to prescription, now that the descriptive phases of product elimination research have been tackled. This is not to say, however, that description is complete, but rather that, at least, the groundwork is provided by the current study and other similar studies undertaken in the past decade.

The researcher contends that the subject of product elimination offers researchers a challenge for conceptual and methodological growth, with opportunities for innovative research programmes which could be of great value and relevance to management.

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CHAPTER 8

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Appendix 1

Schedule 1: Company-Level BehaviourSection 1 General Questions

1. What are the products manufactured by your company?
.....
2. What is the number of full-time employees on the company payroll?
.....
3. Can you describe the structure of the company?
.....

Section 2 Strategic and Product Planning

"Strategic planning can be described as setting company objectives. Product Planning can be described as the step of strategic planning which selects the boundaries of the company's business, continuously develops the optimum mix of products, formulates the appropriate marketing strategies which will achieve company goals".

4. Does the company set overall objectives to guide the company's future? YES NO
5. If no, why?
.....
6. If yes,
 - a) What are some of the most basic objectives of the company?
 - b) Are these objectives in writing and accessible to others?
 - c) Have these objectives been transmitted to other members of the organisation? To whom? How?
.....
7. Is there any particular way in which you approach this overall planning for the company's future? For example, do you have an organised process which you follow for defining business boundaries, developing product plans changing your product mix and marketing strategy?

YES NO
8. If so, to what extent is this product planning process guided by written procedures, what elements of the product planning process do these procedures cover and whom in the organisation do they cover?
.....

9. If no, could you briefly describe the nature of your product planning process?

.....

10. What do you consider to be the company's most important planning activity?

.....

Section 3 General Product Elimination Questions

11. How many products have you eliminated from your product range over the last 5 years?

12. What percentage of the total number of products in your product range does this represent?

13. Could you briefly describe the precipitating circumstances which led to these decisions?

.....

14. Are the company's product elimination activities planned and periodically conducted as part of the planning process?

.....

15. To what extent are the company's product elimination activities guided by written company procedures?

.....

16. Do you believe that there is a need for establishing a more formal approach to reviewing and deleting weak products in your company? YES NO.....

17. Would you please elaborate?

.....

Section 4 Recognition of Elimination Candidates

18. Do you consider the company's overall objective when establishing product goals?

19. If no, why?

20. Do you set financial and/or market goals for each individual product?

21. If no, why?

22. If yes, what goals do you use in evaluating a product's expected performance?

23. Have you established a definite set of criteria and decision rules (minimum standards of performance) for selecting the most promising capital expenditure (new product) proposals.
- YES NO
24. If no, why?
25. If yes, please explain
-
26. To what extent are the criteria and decision rules utilised in new product planning used in the review of existing product performance?
-
27. Have you established predetermined minimum standards of performance for every product, which, if not reached serve as warning signals indicating that the product is experiencing problems.
- YES NO
28. If no, why?
29. If yes, a) what are they
- b) have you found it useful or necessary to write them down in a product policy statement?
30. Do you review (audit) your existing products on a regular basis?
31. If no, what might instigate your elimination process?
-
32. If yes, a) to what extent is this activity guided by written procedures?
-
- b) how often is it carried out?
33. If written, what audit criteria do these procedures involve? Whom in the organisation do they cover?
34. If unwritten, what criteria would you use to judge each product's performance, and how would you rank their importance?
35. How would you obtain the necessary data for each criteria?
-
36. Is there any type of quantification (assignment of weights etc.) of these criteria during the audit? If so, what?

Section 5 Analysis and Revitalisation

37. Once a product not performing at expected levels is brought to management's attention, do you carry out an analysis to investigate the causes of the products deviation from the expected performance level? YES NO
38. If no, why?
39. If no, what is your course of action likely to be
.....
40. If so, which areas do you investigate, and who is involved?
.....
41. Do you isolate alternative courses of corrective action for revitalising the product's performance?
.....
42. If no, why?
43. If no, what is your course of action likely to be?
.....
44. If so, what are the types of corrective action you would consider?
45. How do you evaluate, which, if any, are viable courses of action?
46. Do you try to compare alternatives against any predetermined criteria, or do you try to determine whether a corrective alternative is feasible?

Section 6 Evaluation and Decision-Making

47. Once management has decided that it cannot prolong the life of a product any further through changes in its design and/or marketing mix, do you carry out a detailed investigation to determine if, indeed, elimination is indicated?

YES NO
48. If no, why?
49. If yes, to what extent is this activity guided by written procedures?
50. If written, what evaluation factors do these procedures cover, whom in the organisation do they cover?.....
51. If unwritten, what factors do you consider before you make the final decision to eliminate a product? Please rank according to importance.

52. How would you obtain the necessary data to evaluate these criteria?
53. Who is involved in the weak product evaluation process.
54. Has any of these evaluation factors ever forced the company retain a product in the range? YES NO
55. If so, could you please elaborate?
56. Is there any quantification (assignment of weights etc.) of the factors used in your company to evaluate the impact of the product's elimination on the company performance?
- YES NO
57. If yes, please explain
58. If no, what kind of evaluation do you carry out in actually making a final decision on whether to drop the product
-

Section 7 Implementation of The Elimination Decision

59. After your company has decided to eliminate a product from the range, what elimination strategies does it use? In other words, how does the company go about implementing the elimination decision?.....
60. Do you use a standard form (document) to communicate the decision and to schedule implementation activities?
- YES NO
61. If so, please explain
62. What factors does your company consider in determining the method and timing of a product's elimination?
63. How do you obtain the necessary data to decide method and timing of a product's elimination?
64. Do you develop a detailed plan in order to carry out the implementation of the decision?
65. If so, is someone assigned the responsibility of drawing up and executing the implementation plan?
- YES NO
66. Could you please describe the implementation process by specifying the organisational participants as well as the tasks performed and the factors considered from the time the elimination decision is reached until the time when the product is completely discontinued?

67. Do you consult your customers before making the elimination decision? YES NO
68. After deciding to eliminate do you notify your customers that the elimination is taking place?
YES NO
69. If no, why?
70. Have you ever experienced any customer opposition to discontinuing a product?
YES NO
71. If yes, could you please elaborate?
72. Do you have an explicitly stated parts policy?
YES NO
73. If yes, can you state it?
74. If no, what do you consider to be your replacement parts policy?

Appendix 2

Schedule 2 Product-Level BehaviourSection 1 General Questions

1. Could you give a historical, chronological account of how you eliminated this product from the product range? (Including procedures used and people involved at the various different stages.)
.....
.....
.....
2. What was the name of the eliminated product?
.....
3. For how long had the product been marketed?
.....
4. Was the elimination of this product typical of your product elimination process?
5. If no, please explain
6. What was the percentage of the company's total sales volume accounted for by this product?
7. What was the percentage of the total number of resources (capacity, labour hours, machine hours etc.) that this product represented?
8. Did the product have any specific goals? If so, which?
.....
9. Was the product complementary to other products in the range?
.....
10. If so, in what way?
11. How much fixed capital was invested in the product?
.....
12. How many employees were involved in the production and marketing of the product?

- 13. Was there any change in manufacturing technology which had an effect on elimination?
- 14. If so, which?
- 15. What were the precipitating circumstances which led to the elimination of this product?
.....
- 16. Who initiated the elimination of this particular product and who made the final decision?
- 17. What were the approximate dates for
 - a) the beginning of the product's study
 - b) the final decision to eliminate the product
- 18. Do you believe that the product should have been eliminated sooner?
- 19. If so, could you please elaborate?
- 20. Did you replace this particular product with a new one?
- 21. What did your company expect to achieve by eliminating this product?
- 22. Was this achieved?

Section 2 Recognition of Elimination Candidates

- 23. Which factors led you to believe that the product may have been a candidate for elimination?
- 24. Did you look at any other factors which might have confirmed or refuted your initial suspicions?
- 25. If no, why?
- 26. If so, could you please list them and rank their importance?

27. In retrospect, do you think there were any other factors which might have helped you to recognise the weak products?
.....
28. If yes, in what way would these factors have increased your information needs?
.....
29. Do you think that the process by which you recognised the weak products was in any way important to the final success of the elimination?
.....
30. At this stage in the decision, what were the major areas of uncertainty?
.....

Section 3 Analysis and Revitalisation

31. Did you carry out an analysis to investigate the causes of the product's deviation from its expected performance?
.....
32. If no, why?
.....
33. If so, would you briefly describe the analysis undertaken?
.....
34. In retrospect, do you think there were any factors you might have investigated to give an indication of why the product deviated from its expected performance?
.....
35. If so, how would this have affected your information needs?
.....
36. Do you think that the process by which you identified the causes of deviation contributed to the final success of your elimination?
.....
37. If no, why?
.....
38. If so, please explain
.....
39. At this stage in the decision, what were the major uncertainties?
.....

40. Before the product was singled out as a candidate for elimination, were there any possibilities open to you which might have permitted you to continue its production?
-
-
41. If so, what were they?
-
42. If not, why?
-
43. Did you analyse any of these alternatives to find out which were appropriate for your company?.....
-
44. If no, why?
45. If yes, how did you go about analysing them?
-
46. Which, if any, alternatives did you reject, why?
-
47. Which, if any, alternatives did you accept, why?.....
-
48. Was there any information which would have helped you, but which was not available to you?
49. Do you think that the way in which you considered alternatives to elimination contributed to the success of the eventual elimination?
-
50. If no, why?
51. If yes, please explain
52. At this stage in the decision, what were the major uncertainties?
-

Section 5 Evaluation and Decision-making

53. Did you analyse the effect the product's elimination on other facets of the company operation, to ascertain whether elimination of the product was an appropriate course of action?
-
54. If no, why?
55. If yes, could you please list those aspects and rank them according to their importance?
-
56. If yes, could you briefly describe the analyses you carried out in each area under investigation?
-
57. With the product now eliminated, have there been any effects which you might have looked at before the decision, which might have facilitated the process?
-
58. If so, how would these have increased your information needs?
-
59. Do you believe that the process by which you decided to eliminate the product contributed to the success of the elimination?
-
60. If no, why?
61. If so, please explain

Section 5 Implementation of the Elimination Decision

62. Did you carry out an analysis in order to determine the method and timing of your elimination? YES NO
63. If so, how did you analyse and what factors did you consider?
-
64. Could you please rank these factors in order of importance?
-
65. Now that you are in a position to see what the elimination did effect, are there any factors you might have considered which would influence method and timing of the elimination decision?
-

66. If so, what additional information would you have needed?
.....
67. Was anyone given specific responsibility for the actual
elimination?
.....
68. If so, please explain
69. Did you develop a detailed plan and timetable to determine
a) when to notify
b) when to notify
c) how to notify
d) how the product could be effectively extracted from
the business
70. If no, please explain
71. If yes, please explain
72. What was the length of time between deciding definitively to
eliminate the product and its actual withdrawal from your
product range?
.....
73. Do you believe that the process through which you eliminated
the product from your range contributed to the success of your
elimination?
.....
74. If no, why?
.....
75. If so, please explain
.....
76. As you were actually eliminating, what (if any) was uncertain
to you?
.....

Appendix 3

July 1984

Dear Sir,

Product Elimination in the British Manufacturing Industry

In recent years, the subject of New Product Development has received much attention: in the press, in debate, in practice. This is due to the importance of New Product Development to the survival and growth of any business firm. On the other hand the elimination of products from the range, the logical counterpart to New Product Development, has not been given the same consideration. Consequently, knowledge of the product elimination decision-making process is scant, not only in the academic world, but also in the business community.

It is our intention to study this process as it exists in the British Manufacturing Industry, not only to gain an understanding of what goes on in industry, but ultimately to help contribute to the effectiveness of management in this important area.

We are now preparing the initial part of our research, the aim of which is to provide us with an insight into business practice in the area of Product Elimination. It is felt that the best way to collect the initial data is in the form of personal interviews, in a number of selected companies. Your company is one of a few representative companies selected to participate in this stage of the research, and it is in this connection that we are contacting you to ask for assistance.

We do appreciate that personal interviews can often take up valuable management time, and in order to minimise this effect, we would envisage speaking, not only to you, but also to two or three of your people who may be involved in, or connected with the decision to eliminate products from your range. We do not anticipate that the interviews would last more than two hours.

The research is being funded by the Leverhulme Trust. However, all information will be treated with the greatest confidence and full anonymity preserved. A report summarising the findings will, of course, be available to all participating firms.

-2-

We would ask then, as a first step, that you complete and return the enclosed, brief questionnaire. (A stamped addressed envelope is also enclosed). At the end of the questionnaire you may indicate your willingness, or otherwise to participate in this research, which we do believe will be of direct benefit to the British Manufacturing Industry.

If your answer is favourable, we will then contact you to arrange a convenient date and time for the interview. Your assistance in the research would be most valuable and the response from each firm will count heavily in the research results. Thank you very much and we sincerely hope for your early reply and cooperation.

Yours faithfully,

G.J. Avlonitis (Dr.)
Lecturer in Marketing

S.J. Hart B.A.
Research Assistant.

UNIVERSITY OF STRATHCLYDESURVEY OF PRODUCT ELIMINATION DECISION-
MAKING IN MANUFACTURING INDUSTRY: PROJECT "DROPSTRAT"General Instructions

1. The purpose of this study is to gather comparative information regarding practices, policies, opinions and company characteristics as they relate to the product elimination decision. Product elimination, as has been defined in this research, might involve either the elimination of a product range, or the elimination of certain versions, sizes and models of that range. This questionnaire has been designed to be completed by a top executive involved in this decision, preferably the Managing or Marketing Director.
2. Questions are grouped in four parts. The first part deals with the product/market strategy of the company. The second part seeks to collect information about the company's product planning and product elimination activities. The third part asks management to choose a specific product which has been eliminated recently, and to provide information regarding its elimination process. Finally, the fourth part seeks to collect information about the company's internal operations and external environment.
3. As this questionnaire is a consensus document resulting from a pilot survey, it is possible that certain questions will be more relevant to some companies than to others. If a question is not applicable to your own organisation please either disregard it, or alternatively, if possible, a general expression of opinion will be most welcome.
4. In your responses, please be careful to describe practices as they exist, not as you believe they should exist. If data are requested, answer as best you can without troubling to do research.
5. All information provided will be held in strictest confidence and full anonymity preserved. However, should you wish to have a report of the results and recommendations of this research, please enter your name and your company's name at the end of the questionnaire to enable us to send you the report.

SECTION I: BACKGROUND INFORMATION AND PRODUCT/MARKET STRATEGY

Office use
only
(computer
processing)
QN(1)-(4)
CN(5)1
WAV 7

A) Type of Industry

Q1. Please state the type of products manufactured by your company.

.....

9

B) Company Size

Q2. What was the total sales turnover of your company during the last financial year (1984-1985)?

.....

11-13

Q3. What is the number of full-time employees on the company's payroll?

.....

14-17

C) Strategic Planning

Q4. Does your company engage in any long term/strategic planning?
(ie. catering for the period beyond the immediate 12-18 months).

Please tick YES ☐ NO ☐

19

(If NO go to question 6)

Q5. If YES,

a) Which of the following time scales best describes the time horizon of your strategic plan?

Please tick 2-3 Years ☐ 4-5 Years ☐ over 5 years ☐

20

b) Given below is a list of issues with which strategic planning may be concerned. Please use the following scale to indicate how relevant each issue is to your own long term/strategic planning.

Please Tick the Appropriate Box.

<u>STRATEGIC PLANNING ISSUES</u>	Extremely Relevant	Very Relevant	Relevant	Slightly Relevant	Not Relevant	
a) Definition of the company's product-markets	☐	☐	☐	☐	☐	22
b) Long term investment	☐	☐	☐	☐	☐	23
c) Future sales volume	☐	☐	☐	☐	☐	24
d) Return on Investment	☐	☐	☐	☐	☐	25
e) Cash Flow/Liquidity	☐	☐	☐	☐	☐	26
f) Forecast of market size & market share	☐	☐	☐	☐	☐	27

54321

STRATEGIC PLANNING ISSUES

	Extremely Relevant	Very Relevant	Relevant	Slightly Relevant	Not Relevant	
g) Mergers and acquisitions	☐	☐	☐	☐	☐	28
h) Company image/reputation	☐	☐	☐	☐	☐	29
i) New product development	☐	☐	☐	☐	☐	30
j) Forecasting technological change	☐	☐	☐	☐	☐	31
k) Other (Please specify)	☐	☐	☐	☐	☐	32

54321

D) Product/Market Strategy

- Q6. Listed below are 5 product-market strategies for achieving company objectives. Use the following scale to indicate the importance of each of these strategies in achieving your company objectives. Please tick the appropriate box

<u>STRATEGIES</u>	Extremely Important	Very Important	Important	Slightly Important	Not Important	
a) Increasing sales of present products in current markets.	☐	☐	☐	☐	☐	34
b) Developing new markets for existing products.	☐	☐	☐	☐	☐	35
c) Phasing out unprofitable products and markets.	☐	☐	☐	☐	☐	36
d) Developing new products to satisfy existing markets.	☐	☐	☐	☐	☐	37
e) Developing new products to serve new markets.	☐	☐	☐	☐	☐	38

54321

- Q7. Approximately what percentage of current sales volume is accounted for by products introduced in the last 5 years?

40-41

E) Capacity Utilisation

- Q8. On average, has your level of output been below capacity over the last 5 years? (i.e. have you been working below a satisfactory full rate of operation?).

Please tick

YES

☐

NO

☐

43

- Q9. If YES, please indicate how much below capacity you have been operating, using the scale provided.

Please tick

VERY MUCH BELOW

☐

QUITE BELOW

☐

A LITTLE BELOW

☐

44

SECTION II: PRODUCT PLANNING AND THE PRODUCT ELIMINATION DECISION

A) Product Planning In the Company

Product planning can be described as an activity which continuously develops the optimum mix of products and formulates the appropriate marketing strategies for the company.

- Q10. Do you have any regular formal committee meeting(s) in the company to discuss product planning as described above?

YESNO.

46
- Q11. If YES, a) please specify the name of the committee meeting(s)? (eg new product development meetings, price review meetings, etc.)

.....

.....

.....

47-54
- b) please state the product planning issues discussed in the above meetings (eg identifying new product requirements, reviewing product cost structure and pricing, etc.).

.....

.....

.....

55-64

B) General Information About Product Elimination In The Company

Company Product Range

"Product range" is explained by the following example: Ford Cars have several product ranges including the 'Granada' range, the 'Sierra' range, the 'Capri' range, the 'Escort' range and the 'Fiesta' range. Each range comprises a number of models, engine sizes and specifications which can be called items.

- Q12. Given the above definition,

a) Approximately how many product ranges does the company produce?

66-67
- b) On average, how many standard price list items are produced in each product range?

68-71
- c) On average, how many non-standard (optional/"special") items are produced in each product range?

72-75
- Q13. What percentage of your product mix (ie the total number of ranges and items) generates 80% of your sales turnover?%

77-78
- Q14. What is the number of product ranges and items that have been eliminated from your product mix over the last 5 years?

QN(1)-(4)
CN(5)2

Number of <u>Ranges</u> Eliminated But Not Replaced	Number of <u>Ranges</u> Eliminated But Replaced	Number of <u>Items</u> Eliminated But Not Replaced	Number of <u>Items</u> Eliminated But Replaced	7-8 9-10 11-12 13-14
--	---	---	--	-------------------------------

The Decision-Making Process

Q15. Using the scale provided, please indicate the importance of each criterion listed below, in identifying "weak" or "problem" products in your company. Please tick the appropriate box.

<u>CRITERIA</u>	Extremely Important	Very Important	Important	Slightly Important	Not Important	54321
a) Past sales volume	☐	☐	☐	☐	☐	16
b) Profit margin/contribution	☐	☐	☐	☐	☐	17
c) Price trends	☐	☐	☐	☐	☐	18
d) Share of the company's sales	☐	☐	☐	☐	☐	19
e) Sales versus resources utilised	☐	☐	☐	☐	☐	20
f) Stock levels	☐	☐	☐	☐	☐	21
g) Market share	☐	☐	☐	☐	☐	22
h) Market Growth Rate	☐	☐	☐	☐	☐	23
i) Service levels (i.e. time required to meet demand)	☐	☐	☐	☐	☐	24
j) Future sales volume	☐	☐	☐	☐	☐	25
k) Operational problems (e.g. high service/ warranty costs)	☐	☐	☐	☐	☐	26
l) Actual versus projected production loading(economic/ uneconomic batches)	☐	☐	☐	☐	☐	27
m) Product's position on its life cycle curve (age of the product)	☐	☐	☐	☐	☐	28
n) Customer acceptance (i.e. perceived quality/functional performance of the product)	☐	☐	☐	☐	☐	29
o) Activities of competitors	☐	☐	☐	☐	☐	30

Q16. There are several strategies that a company might select to drop a product. Using the scale provided, indicate how frequently each of the strategies listed overleaf is used in your company. Please tick the appropriate box.

STRATEGIES						12345
	Never	Almost Never	Sometimes	Frequently	Very Often	
a) Drop Immediately (i.e. no further production; sell inventory and redirect investment)	☐	☐	☐	☐	☐	32
b) Phase-Out Immediately (satisfy orders received up to the decision day or a previously specified day, then cease production)	☐	☐	☐	☐	☐	33
c) Run-Out; phase out slowly (milk the product; minimise production and marketing expenses to maximise profit)	☐	☐	☐	☐	☐	34
d) Sell-out; (sell or license the product to another manufacturer)	☐	☐	☐	☐	☐	35
e) Drop the product from standard range (and possibly from the catalogue). If a customer still demands the product, manufacture and sell it as a <u>special</u> charging a <u>premium</u> price.	☐	☐	☐	☐	☐	36

Q17. Choosing a strategy to drop a product depends on a number of factors which are listed below. Using the scale provided, please indicate the importance of each factor, in terms of its impact on the selection of an elimination strategy in your company. Please tick the appropriate box.

FACTORS						54321
	Extremely Important	Very Important	Important	Slightly Important	Not Important	
a) Stock on hand (e.g. raw materials; work in progress, finished goods)	☐	☐	☐	☐	☐	38
b) Residual demand (market trends)	☐	☐	☐	☐	☐	39
c) Effect on middlemen, customers	☐	☐	☐	☐	☐	40
d) Availability of replacement product	☐	☐	☐	☐	☐	41
e) Seasonal issues (i.e. time of the year)	☐	☐	☐	☐	☐	42
f) Salvage value of machinery and equipment	☐	☐	☐	☐	☐	43
g) Status of replacement parts	☐	☐	☐	☐	☐	44
h) Time required to shift executives, workforce and resources to other opportunities.	☐	☐	☐	☐	☐	45

(C) The Decision-Making Unit

- Q18. Please rank (1st, 2nd, 3rd etc.) each of the relevant functional areas listed below in terms of their importance in a) initiating (ie identifying candidates for elimination), b) collecting information on, c) deciding, and d) implementing, the elimination of products in your company. Please rank for each column ie a, b, c and d, separately.

<u>Functional Area</u>	a)Importance In Initiating	b)Importance in Collecting Information	c)Importance in Deciding	d)Importance in Implementing	
a) Finance					47-50
b) Marketing					51-54
c) Production					55-58
d) Design/Engineering					59-62
e) Sales					63-66
f) Product/Brand Management					67-70
g) Managing Director					71-74
h) Executive Committee or group (please specify the name of the committee and job titles of its members)					75-78

- Q19. Generally, how many people are involved in the product elimination process? 79-80

QN(1)-(4)
CN(5)3

- Q20. What is the average age of these people? 7-8

- Q21. How many of these people are college/university graduates in their own field of specialisation? 9-10

(D) Formality of the Product Elimination Decision

For each of the following statements, please select the one response which best indicates how well the statement describes the way you actually do things in your company. Please answer each statement, by ticking the appropriate box.

Absolutely False Largely False Somewhat False Somewhat True Largely True Absolutely True 123456

- Q22. A methodical review of all our products' performance is carried out regularly in order to identify problems and/or opportunities in our product strategy.

☐	☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

123456

- | | | | | | | | | |
|------|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------|
| Q23. | In reviewing our products we have explicitly identified the criteria against which we evaluate product performance. | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 13 |
| Q24. | For each of the criteria used we have explicitly established minimum standards of performance. Products failing to meet these standards are selected as elimination candidates. | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 14 |
| Q25. | Our company has specifically assigned responsibilities to an individual and/or committee for making product elimination decisions. | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 15 |
| Q26. | There is no need in our company to review products on a regular periodic basis in order to identify candidates for elimination. We consider elimination when problems develop with particular products. | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 654321
16 |
| Q27. | We have a written procedure, which guides our product elimination decision process and which we follow in making an elimination decision. | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 123456
17 |
| Q28. | No specific responsibilities have been assigned to anyone in the company regarding the elimination decision. The idea materialises as a result of informal conversation regarding product performance through informal activities. | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 654321
18 |
| Q29. | Some sort of standard form or document pertaining to product elimination decisions exists in our company to assist management to reach an elimination decision. | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 123456
19 |
| Q30. | The implementation of an elimination decision is carried out through a standard form or document which management uses to communicate the decision & schedule implementation activities. | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 20 |

SECTION III: ELIMINATION OF A SPECIFIC PRODUCT

This section of the questionnaire concentrates on a specific product recently discontinued. Please select a product which has been eliminated from the product mix, preferably one which you can remember clearly. You may choose either a 'range' or an 'item' (for definitions of range and item see Page 4, Q12) which has either been completely dropped or replaced. Please answer all the questions in this section with reference to this product.

(A) Background Information About the Product

Q31. What was the name of the product? (you may use a fictitious name)

.....

Q32. Was the product a 'range' or an 'item'? Please tick

22

Range

☐

Item

☐

Q33. Was the product replaced by any other product? Please tick. YES

NO

23

☐
☐

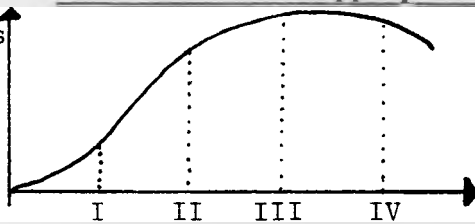
Q34. What was the year of the product's introduction onto the marketplace?

24-25

Q35. What was the year that the product ceased to be produced and/or was removed from the catalogue?

Q36. At which of the following stages was this product when you decided to drop it? Please tick the appropriate box.

f Sales



I Introduction

☐

II Growth

☐

III Maturity

☐

IV Decline

☐

27-30

Q37. What was the approximate percentage of the company's total sales volume accounted for by this product when you decided to eliminate it?%

32-33

Q38. a) Was there any fixed capital (eg plant and equipment) invested solely in this product? Please tick.

YES

☐

NO

☐

34

b) If YES, what was the percentage of total fixed capital invested solely in the product?

35-36

.....

Q39. Do you consider the elimination of this product to have been part of your overall product/market strategy? Please tick.

YES

☐

NO

☐

37

b) If YES, please explain

38-42

.....

B) Information about the Elimination Process

Q40. Listed below are several stimuli which can trigger the decision to eliminate a product. Using the scale below, please indicate how important each stimulus was in triggering the elimination of this particular product.
Tick the appropriate box.

<u>STIMULI</u>	Extremely Important	Very Important	Important	Slightly Important	Not Important	54321
a) Government policies & regulations.	☐	☐	☐	☐	☐	44
b) Operational problems (eg production, marketing)	☐	☐	☐	☐	☐	45
c) Third party decisions (eg trade; British Standards Institute, etc.)	☐	☐	☐	☐	☐	46
d) Competitive activity (eg intro- duction of a new product)	☐	☐	☐	☐	☐	47
e) Development of a new product.	☐	☐	☐	☐	☐	48
f) Company resources required elsewhere.	☐	☐	☐	☐	☐	49
g) Problems associated with raw materials/parts.	☐	☐	☐	☐	☐	50
h) Development of an active variety reduction (rationalisation) programme.	☐	☐	☐	☐	☐	51
i) Decline in market potential (eg technological obsolescence).	☐	☐	☐	☐	☐	52
j) Poor sales performance.	☐	☐	☐	☐	☐	53
k) Poor profit performance.	☐	☐	☐	☐	☐	54
l) Poor product quality/design.	☐	☐	☐	☐	☐	55
m) Poor fit with company capa- bilities or strategic plans.	☐	☐	☐	☐	☐	56
n) Rationalisation due to mergers and acquisitions.	☐	☐	☐	☐	☐	57
o) Poor fit with company image.	☐	☐	☐	☐	☐	58
p) Parent company decisions & policies.	☐	☐	☐	☐	☐	59
q) Change in exchange rates.	☐	☐	☐	☐	☐	60

Q41. Before deciding to drop the product, for how long did you suspect that it might be a candidate for elimination?
..... 62-63

Q42. Who in the company initiated the elimination of this product? (Please specify the functional area(s))
..... 65-72

Q43. a) Do you think the product should have been eliminated sooner? YES ☐ NO ☐ 74

b) If YES, please explain

75-79

Q44. Did you attempt to revitalise the product in any way before you decided to drop it?

Please tick YES ☐ NO ☐

80

(If NO go to question 47)

Q45. If YES, please indicate to what extent you considered the following methods when you attempted to revitalise this product.

Please circle your answer.

QN(1)-(4)
CN(5)4

METHODS OF REVITALISATION

Considered
to a great
extent

Not
Considered
at all

a) Quality Improvements.	1	3	5	7	9	7
b) Cost Reduction.	1	3	5	7	9	8
c) Product Modification/ Reformulation.	1	3	5	7	9	9
d) Packaging Changes.	1	3	5	7	9	10
e) Price Increase.	1	3	5	7	9	11
f) Price Decrease.	1	3	5	7	9	12
g) Production Efficiency Improvements.	1	3	5	7	9	13
h) Increase in Effort by Salesforce.	1	3	5	7	9	14
i) Print-Media Advertising Increase.	1	3	5	7	9	15
j) Warranty and Guarantee Extension.	1	3	5	7	9	16
k) Sales Promotion Increase (trade shows, literature, distribution & customer incentives).	1	3	5	7	9	17
l) Market Concentration (ie product withdrawal from certain market segments).	1	3	5	7	9	18
m) Development of New Markets (eg export).	1	3	5	7	9	19
n) Product Range Extension.	1	3	5	7	9	20
o) Distribution Improvements (ie better display of products).	1	3	5	7	9	21
p) Change in Channels of Distribution.	1	3	5	7	9	22
q) Product Factoring/Sourcing (ie buying it rather than making it)	1	3	5	7	9	23
r) Product Range Reduction.	1	3	5	7	9	24

Q46. If you actually adopted any of the methods of revitalisation, listed on the previous page, please state which one(s) (ie a, b, c etc. ... r)

25-4

Q47. There appears to be a number of factors which management generally considers to determine whether it is in the best interests of the company to eliminate a product. Using the scale provided, please indicate the extent to which each of the factors listed below was considered in deciding to drop this particular product. Please circle your answer.

<u>FACTORS</u>	Considered to a great extent					Not Considered at all	
a) Product's market potential.	1	3	5	7	9		44
b) The effect of the elimination on total company sales volume.	1	3	5	7	9		45
c) Availability of a new product.	1	3	5	7	9		46
d) The effect of the elimination on recovery of overheads.	1	3	5	7	9		47
e) Re-allocation of resources to other opportunities.	1	3	5	7	9		48
f) The effect of the elimination on distribution (eg loss of shelf space).	1	3	5	7	9		49
g) Re-allocation of executive & selling time.	1	3	5	7	9		50
h) The effect of the elimination on fixed capital (ie plant & equipment).	1	3	5	7	9		51
i) Interchangeability (commonisation) of parts, materials or packaging.	1	3	5	7	9		52
j) The effect of the elimination on "full-range" policy.	1	3	5	7	9		53
k) Existence of substitutes to satisfy the customer.	1	3	5	7	9		54
l) The effect of the elimination on sales & profitability of other products in the range.	1	3	5	7	9		55
m) Product's contribution to a profit centre (eg Branch, factory, depot).	1	3	5	7	9		56
n) The effect of the elimination on company image.	1	3	5	7	9		57
o) The effect of the elimination on capacity utilisation.	1	3	5	7	9		58
p) Competitive reaction to the withdrawal.	1	3	5	7	9		59
q) The effect of the elimination on customer/trade relations.	1	3	5	7	9		60
r) The effect of the elimination on working capital (eg stock).	1	3	5	7	9		61
s) The effect of the elimination on employment prospects of the workforce.	1	3	5	7	9		62

Q48. Have any of the above listed factors ever led you to defer an elimination decision? Please tick YES ☐ NO ☐ 63

Q49. If so, please, specify which factor(s) (eg a,b,c... etc r)..... 64-80

..... QN(1)-(4)
CN(5)5
7-8

Q50.a) Returning to the specific product you have chosen, who made the final decision to drop this product? (Please specify the functional area).

..... 10-17

b) How many people were involved in this particular decision? 18-19

Q51. As has been mentioned, there are several different strategies for implementing the decision to drop a product. Please tick the box adjacent to the strategy you used to implement the elimination of this product.

STRATEGY

a) Drop Immediately (no further production; sell inventory and redirect investment). ☐ 21

b) Phase Out Immediately (satisfy orders received up to the decision day or a previously specified day, then cease production). ☐ 22

c) Run-Out; phase out slowly (milk the product; minimise production and marketing expenses to maximise profit). ☐ 23

d) Sell Out; (sell or license the product to another manufacturer). ☐ 24

e) Drop the product from the standard range (and possibly from the catalogue). If a customer still demands the product, manufacture and sell it as a special charging a premium price. ☐ 25

Q52. What was the length of time between deciding definitely to eliminate the product and actually a) ceasing its production? 27-28

b) removing it from the price-list/catalogue? 29-30

Q53. During the decision-making process, did you experience any interruptions, internal or external, or any timing delays and 'speed ups'?. Please tick

YES ☐ NO ☐ 32

Q54. If YES, please explain

..... 33-37

.....

(C) Outcome of the Product Elimination Decision

Q55. By ticking the appropriate circle in the scale, please indicate the extent to which you agree or disagree with each of the following statements relating to the outcome of this particular elimination decision.

	AGREE			DISAGREE			
	Totally	Quite	A Little	A Little	Quite	Totally	
a) No stocks (eg raw materials, packaging) related to this product have been written off.	☐	☐	☐	☐	☐	☐	39
							123456
b) There was adverse customer reaction to the decision to eliminate the product.	☐	☐	☐	☐	☐	☐	40
							654321
c) Dropping this product led to enhanced company profits.	☐	☐	☐	☐	☐	☐	41
							123456
d) The decision to drop this product led to a loss of confidence in our sales force.	☐	☐	☐	☐	☐	☐	42
e) The elimination adversely affected the sales volume and market share of the company.	☐	☐	☐	☒	☐	☐	43
							654321
f) Dropping this product led to the enhanced sales and profits of other products in the range.	☐	☐	☐	☐	☐	☐	44
							123456
g) The 'gap' left by withdrawing the product was filled by the competition.	☐	☐	☐	☐	☐	☐	45
							654321
h) Dropping the product released resources that were applied more profitably elsewhere.	☐	☐	☐	☐	☐	☐	46
i) When the product was dropped, the fixed capital invested was fully written down(depreciated).	☐	☐	☐	☐	☐	☐	47
j) After the product was dropped, there were no further enquiries or orders for it.	☐	☐	☐	☐	☐	☐	48

D) Problems and Comments

Q56. What have you found to be the greatest problems in your product elimination process?

..... 50-64

Q57. Do you have any comments regarding your product elimination activities? ...

..... 65-74

SECTION IV: INTERNAL OPERATIONS & EXTERNAL ENVIRONMENT
Market Diversity

Q58. What is the percentage of your sales turnover that goes to each of the classes of markets noted below?

a) By Types of Customers

Percentage of
Company Sales

Industrial Customers (manufacturers & other
business organisations)
Distributors/Agents
Retailers/Dealers
Government/Institutions

_____%
_____%
_____%
_____%
_____%
TOTAL 100

b) By Geographical Region

76-77

U.K.
Western Europe (eg E.F.T.A.)
America (North and South)
Rest of the World

_____%
_____%
_____%
_____%
TOTAL 100

B) Customer Dependence

Q59. Approximately what percentage of total sales volume is accounted for by your 5 largest customers?%

78-80

Q60. How dependent is the company on its 10 largest customers?

Circle your answer

QN(1)-(4)
CN(5)6

Not dependent at all	Not Particularly Dependent	Dependent	Fairly Dependent	Very Dependent	
1	2	3	4	5	7

C) Production Technology

Q61. Given below is a list of production technologies. Please use the following scale to write the appropriate number adjacent to each kind of production technology to indicate the extent to which it is used for the manufacture of the products accounting for the bulk of your sales turnover.

The Scale is:

- 1 = The production technology is not applicable to the bulk of the company's products.
- 2 = It is used very slightly in the manufacture of the company's products.
- 3 = It is used slightly in the manufacture of the company's products.
- 4 = It is used moderately.
- 5 = It is used considerably.
- 6 = It is used to a great extent.
- 7 = It is almost exclusively used in the manufacture of the bulk of the company's products.

List of Production Technologies

Scale number

- | | | |
|---|-------|----|
| 1. Production of simple or technically complex units to customers specifications (custom technology). | _____ | 9 |
| 2. Production of small batches (job shop technology). | _____ | 10 |
| 3. Large batch production of components(for subsequent assembly). | _____ | 11 |
| 4. Large batch production of finished goods (eg bottles, cans, drugs). | _____ | 12 |
| 5. Mass production as on an assembly line (eg automobiles). | _____ | 13 |

(D) Vertical Integration

Q62. Given below is a list of activities related to the company's vertical integration. Please use the following scale to write the appropriate number against each activity to indicate how much the company is engaged in the activity.

SCALE

- 1 = The company does not engage in the activity at all.
- 2 = The company engages in it to a very small extent.
- 3 = The company engages in it to a small extent.
- 4 = The company engages in it moderately.
- 5 = The company engages in it to a considerable extent.
- 6 = The company engages in it to a great extent.
- 7 = The company engages in it to the full extent of its requirements.

<u>Activity</u>	<u>Scale Number</u>
a) The company has its own R & D department which engages in <u>technological</u> research.	15
b) The company has its own R & D department which engages in <u>product</u> research.	16
c) The company owns the supply of the main raw materials used.	17
d) The company owns or manufactures the supply of parts, tools or components required in operating its plants.	18
e) The company produces goods derived or manufactured from its own main products.	19
f) The company is responsible for wholesaling its products. (ie owns wholesale outlets).	20
g) The company is responsible for retailing its products. (ie owns retail outlets).	21

(E) Technological Change

Q63. What is your estimate of the rate at which research and product development turn out new products in your industry. Please circle the appropriate number below.

- 1 No new products marketed in the last decade.
- 2 A little R & D and/or market changes result in few new products.
- 3 Moderate R & D and/or market changes result in a moderate number of new products. 23
- 4 Considerable R & D and/or market changes results in a considerable number of new products.
- 5 Heavy R & D and/or market changes result in many new products.

f) Competition

Q64. Please circle the appropriate number in each of the following scales that relate to the intensity of three different types of competition in your main industry.

	Virtually No Competition	A Little Competition	Moderate Competition	Considerable Competition	Intense Competition	
a) <u>Price</u> Competition.	1	2	3	4	5	25
b) Competition In <u>Product</u> <u>Characteristics</u> (quality, variety).	1	2	3	4	5	26
c) Competition in Promotion/ Service and Distribution/ Delivery.	1	2	3	4	5	27

Q65. In terms of the impact upon the profitability of your company, how important is each of the following types of competition to your "bread and butter" products? Please use the following scale to rate the importance of each type of competition.

Scale

- 1 Of no importance - a moderate intensification of the competition would not affect the company's profitability.
- 2 Slightly important.
- 3 Moderately important.
- 4 Considerably important.
- 5 Of great importance - a moderate intensification of the competition would greatly affect the company's profitability.

<u>Types of Competition</u>	<u>Rating of Importance to Co. Profitability</u>	
a) Price Competition	_____	29
b) Competition in <u>Product</u> <u>Characteristics</u> (quality, variety)	_____	30
c) Competition in Promotion/ Service and Distribution/ Delivery.	_____	31

G) Attitudes to Product Elimination

Q66. Using the scale provided, please indicate the extent to which you agree or disagree with the statements below about product elimination. Please tick the appropriate circle.

	AGREE			DISAGREE			
	Totally	Quite	A Little	A Little	Quite	Totally	
a) Product Elimination is as important as other planning activities such as new product development & modification of existing products.	☐	☐	☐	☐	☐	☐	33
b) There is no need to eliminate products actively as the market does it for you.	☐	☐	☐	☐	☐	☐	34
c) Consideration of planning of what products will be eliminated in the future is of little value.	☐	☐	☐	☐	☐	☐	35
d) Focusing on product elimination helps us to evaluate the performance of our products in a critical and dispassionate way.	☐	☐	☐	☐	☐	☐	36
e) Product elimination only makes sense when the company is in trouble and profitability becomes difficult.	☐	☐	☐	☐	☐	☐	37
f) If top management want their company to be successful, they must treat product elimination as a continuous managerial function.	☐	☐	☐	☐	☐	☐	38

Do you require a summary report of the results and recommendations of this research?

YES ☐ NO ☐

If YES, please identify the proper addressee

Name:
 Position:
 Company:
 Address:

Please return questionnaire to:

Dr. G J Avlonitis and Ms S Hart
 University of Strathclyde
 Department of Marketing
 FREEPOST
 Glasgow
 G4 OBR.

THANK YOU VERY MUCH INDEED FOR YOUR COOPERATION.

Appendix 5

May 1985

Dear Sir,

Product Elimination in Manufacturing Industry: Project "DROPSTRAT"

Recently management has had to cope with severe resource constraints, inflation, high interest rates and depressed markets. Elimination of weak and slow-moving products may be the correct response to such conditions. However, little is known about how management in British manufacturing industry approaches the problem of making product elimination decisions.

To obtain an insight into this problem, we, at the Department of Marketing, University of Strathclyde, are conducting an in-depth research project the primary objectives of which are:

- a) To examine the managerial approach to the product elimination decision and to assess the impact of the company's internal operations and external environment on this approach;
- b) To provide useful guidelines on how to improve managerial effectiveness in the area of product elimination.

As a senior executive in a manufacturing company, you are in a unique position, to shed light on how management approaches the product elimination decision. Enclosed is a research questionnaire, which we hope you will complete and return in the enclosed, addressed Freepost (no stamp required) envelope. Since it is expensive to process a research project of this nature, only a limited cross-section of manufacturing companies is being surveyed. Consequently, your participation is vital to the successful completion of this research.

Since any survey of management practices must have some depth to be of value, this questionnaire will take more than just the customary "matter of minutes" to be completed. It has been designed, however, to facilitate rapid item by item response, requiring about 25 to 30 minutes for thoughtful completion. Minimal written composition is required.

/...

-2-

We do hope you find completing the questionnaire to be stimulating and interesting. Feedback summarising the overall research findings and recommendations will be sent to you on request. All responses will be kept strictly confidential and will be reported only in aggregate form.

Thank you very much for your time in this matter and we look forward to receiving your response.

Yours faithfully

Dr. George J Avlonitis, BSc,DMS,MSc,PhD,
Lecturer in Marketing - Project Director

Ms Susan Hart, BA
Research Assistant

Appendix 6

June 1985

Dear Sir

PRODUCT ELIMINATION DECISION-MAKING: PROJECT "DROPSTRAT"

If you have already returned the questionnaire on product elimination which we sent you in April, please disregard this letter. If you have not yet answered but would like to, we have enclosed another questionnaire with this letter in case you have misplaced the original one.

The main purpose of this research project is to provide useful guidelines for the improvement of managerial effectiveness in the area of product elimination. As a senior executive of a manufacturing company, you are in a special position to provide insight into how management in manufacturing industry approaches the problem of making product elimination decisions. Consequently, your co-operation in completing and returning the questionnaire in the enclosed addressed Freepost envelope will be greatly appreciated, and is needed for the successful completion of the project.

All information provided will be held in strictest confidence and full anonymity preserved.

Although the questionnaire may look long, it has nevertheless been designed to facilitate rapid item by item response, requiring about 20 to 25 minutes for thoughtful completion.

We hope that you will find the completion of the questionnaire to be stimulating and interesting. As the result of this study should be of interest to manufacturing companies concerned with product elimination activities, a report which summarises overall research findings and recommendations will be sent to you upon your request.

Thank you very much for your time in this matter and we look forward to receiving your response.

Yours faithfully

George J Avlonitis (Dr)
Lecturer in Marketing - Project Director

Susan Hart
Research Assistant

UNIVERSITY OF STRATHCLYDE
COMPUTER SERVICES
SURVEY CODING SHEET

[illegible]

3-JUL-87
14:39:48

Appendix B
STRATHCLYDE UNIVERSITY

DEC VAX-11/780 VMS V4.3

----- S P E A R M A N C O R R E L A T I O N C O E F F I C I E N T S -----										
	V9	V10	V11	V12	V13	V14	V15	V16	V17	V18
V9	1.0000 N(136) SIG .000	.1799 N(136) SIG .036	.2704 N(136) SIG .001	.0708 N(136) SIG .413	.1516 N(135) SIG .079	.1896 N(136) SIG .027	.1505 N(136) SIG .080	.1170 N(136) SIG .175	.3617 N(136) SIG .000	.2270 N(136) SIG .008
V10	.1799 N(136) SIG .036	1.0000 N(137) SIG .000	.1576 N(137) SIG .066	.3060 N(137) SIG .000	.3501 N(136) SIG .000	.1578 N(137) SIG .066	.2651 N(137) SIG .002	.0485 N(137) SIG .573	.1840 N(137) SIG .031	.3196 N(137) SIG .000
V11	.2704 N(136) SIG .001	.1576 N(137) SIG .066	1.0000 N(137) SIG .000	.1388 N(137) SIG .106	.1706 N(136) SIG .047	.3668 N(137) SIG .000	.0663 N(137) SIG .441	.1831 N(137) SIG .032	.1997 N(137) SIG .019	.1189 N(137) SIG .166
V12	.0708 N(136) SIG .413	.3060 N(137) SIG .000	.1388 N(137) SIG .106	1.0000 N(137) SIG .000	.4275 N(136) SIG .000	.2209 N(137) SIG .010	.2425 N(137) SIG .004	-.0299 N(137) SIG .729	.0351 N(137) SIG .684	.0508 N(137) SIG .556
V13	.1516 N(135) SIG .079	.3501 N(136) SIG .000	.1706 N(136) SIG .047	.4275 N(136) SIG .000	1.0000 N(136) SIG .000	.2040 N(136) SIG .017	.2059 N(136) SIG .016	.0507 N(136) SIG .558	.1324 N(136) SIG .125	.1808 N(136) SIG .035
V14	.1896 N(136) SIG .027	.1578 N(137) SIG .066	.3668 N(137) SIG .000	.2209 N(137) SIG .010	.2040 N(136) SIG .017	1.0000 N(137) SIG .000	.1616 N(137) SIG .059	.1432 N(137) SIG .095	.2021 N(137) SIG .018	.3310 N(137) SIG .000
V15	.1505 N(136) SIG .080	.2651 N(137) SIG .002	.0663 N(137) SIG .441	.2425 N(137) SIG .004	.2059 N(136) SIG .016	.1616 N(137) SIG .059	1.0000 N(137) SIG .000	.1036 N(137) SIG .228	.2085 N(137) SIG .014	.2287 N(137) SIG .007
V16	.1170 N(136) SIG .175	.0485 N(137) SIG .573	.1831 N(137) SIG .032	-.0299 N(137) SIG .729	.0507 N(136) SIG .558	.1432 N(137) SIG .095	.1036 N(137) SIG .228	1.0000 N(137) SIG .000	.1831 N(137) SIG .032	.2226 N(137) SIG .009
V17	.3617 N(136) SIG .000	.1840 N(137) SIG .031	.1997 N(137) SIG .019	.0351 N(137) SIG .684	.1324 N(136) SIG .125	.2021 N(137) SIG .018	.2085 N(137) SIG .014	.1831 N(137) SIG .032	1.0000 N(137) SIG .000	.4172 N(137) SIG .000
V18	.2270 N(136) SIG .008	.3196 N(137) SIG .000	.1189 N(137) SIG .166	.0508 N(137) SIG .556	.1808 N(136) SIG .035	.3310 N(137) SIG .000	.2287 N(137) SIG .007	.2226 N(137) SIG .009	.4172 N(137) SIG .000	1.0000 N(137) SIG .000

" . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED.

2-JUL-87 Appendix 9
10:59:12 STRATHCLYDE UNIVERSITY

DEC VAX-11/780 VMS V4.3

----- S P E A R M A N C O R R E L A T I O N

	V20	V21	V22	V23	V24
V9	.1757 N(136) SIG .041	.0758 N(136) SIG .380	.1297 N(136) SIG .132	.2184 N(136) SIG .011	.0824 N(136) SIG .340
V10	.2020 N(137) SIG .018	.2124 N(137) SIG .013	.1826 N(137) SIG .033	.2193 N(137) SIG .010	.1520 N(137) SIG .076
V11	.2409 N(137) SIG .005	.1146 N(137) SIG .182	-.0188 N(137) SIG .827	.1617 N(137) SIG .059	.2218 N(137) SIG .009
V12	.0304 N(137) SIG .724	.1594 N(137) SIG .063	.1616 N(137) SIG .059	.0519 N(137) SIG .547	.0059 N(137) SIG .946
V13	.1274 N(136) SIG .139	.2451 N(136) SIG .004	.1776 N(136) SIG .039	.0162 N(136) SIG .852	.0910 N(136) SIG .292
V14	.1569 N(137) SIG .067	.0120 N(137) SIG .889	.0971 N(137) SIG .259	.2124 N(137) SIG .013	.2176 N(137) SIG .011
V15	-.0158 N(137) SIG .855	.2173 N(137) SIG .011	.1503 N(137) SIG .080	.1669 N(137) SIG .051	.1042 N(137) SIG .226
V16	.2610 N(137) SIG .002	.0637 N(137) SIG .459	.2206 N(137) SIG .010	.2101 N(137) SIG .014	.1670 N(137) SIG .051
V17	.0809 N(137) SIG .347	-.0066 N(137) SIG .939	.2106 N(137) SIG .013	.5181 N(137) SIG .000	.3245 N(137) SIG .000
V18	-.0137 N(137) SIG .874	.2379 N(137) SIG .005	.0990 N(137) SIG .250	.2927 N(137) SIG .001	.3207 N(137) SIG .000

	V55	V56	V57	V58	V59	V60	V61	V62	V63	V64
V9	-.0112 N(136) SIG .897	.0829 N(136) SIG .337	.1283 N(135) SIG .138	.1168 N(135) SIG .177	-.0570 N(132) SIG .516	.1009 N(135) SIG .244	.1763 N(135) SIG .041	.1414 N(134) SIG .103	-.0978 N(133) SIG .263	.2512 N(133) SIG .001
V10	.0832 N(137) SIG .334	.0294 N(137) SIG .733	.1992 N(136) SIG .020	.1869 N(136) SIG .029	.1094 N(133) SIG .210	.2591 N(136) SIG .002	.2104 N(136) SIG .014	.2528 N(135) SIG .003	.1422 N(134) SIG .101	.1212 N(133) SIG .111
V11	.2001 N(137) SIG .019	.1882 N(137) SIG .028	.1039 N(136) SIG .229	.0342 N(136) SIG .692	-.0531 N(133) SIG .544	.0590 N(136) SIG .495	.2517 N(136) SIG .003	.2158 N(135) SIG .012	.0589 N(134) SIG .499	.1112 N(133) SIG .111
V12	-.0733 N(137) SIG .395	.1815 N(137) SIG .034	.0690 N(136) SIG .425	.0076 N(136) SIG .930	.1179 N(133) SIG .176	.1098 N(136) SIG .203	.1563 N(136) SIG .069	.0943 N(135) SIG .276	.0781 N(134) SIG .370	.1512 N(133) SIG .001
V13	.0693 N(136) SIG .423	.0710 N(136) SIG .411	.0407 N(135) SIG .639	.1520 N(135) SIG .078	.1934 N(132) SIG .026	.2913 N(135) SIG .001	.2574 N(135) SIG .003	.1302 N(134) SIG .134	.1041 N(133) SIG .233	.1112 N(133) SIG .111
V14	.1456 N(137) SIG .089	.1985 N(137) SIG .020	.1162 N(136) SIG .178	.1466 N(136) SIG .089	.0151 N(133) SIG .863	.0601 N(136) SIG .487	.3595 N(136) SIG .000	.2522 N(135) SIG .003	.1181 N(134) SIG .174	.1912 N(133) SIG .001
V15	-.0566 N(137) SIG .511	.1676 N(137) SIG .050	.1942 N(136) SIG .023	.1051 N(136) SIG .555	.0889 N(133) SIG .309	.0578 N(136) SIG .504	.1256 N(136) SIG .145	.1435 N(135) SIG .097	.1468 N(134) SIG .090	.1112 N(133) SIG .111
V16	.2309 N(137) SIG .007	.0848 N(137) SIG .325	.0588 N(136) SIG .496	.1639 N(136) SIG .057	.0176 N(133) SIG .841	.1593 N(136) SIG .064	.2992 N(136) SIG .000	.1432 N(135) SIG .098	.1177 N(134) SIG .176	.1412 N(133) SIG .111
V17	.0880 N(137) SIG .307	.2249 N(137) SIG .008	.0521 N(136) SIG .547	-.0215 N(136) SIG .804	.0778 N(133) SIG .373	.0068 N(136) SIG .937	.1368 N(136) SIG .112	.1325 N(135) SIG .126	-.0793 N(134) SIG .362	.2812 N(133) SIG .001
V18	.0130 N(137) SIG .880	.2953 N(137) SIG .000	.3348 N(136) SIG .000	.2750 N(136) SIG .001	.1936 N(133) SIG .026	.1975 N(136) SIG .021	.3682 N(136) SIG .000	.3849 N(135) SIG .000	.1733 N(134) SIG .045	.3012 N(133) SIG .001

S P E A R M A N C O R R E L A T I O N				
V65	V66	V67	V68	V69
-.0736 N(131) SIG .404	-.0394 N(131) SIG .655	.0913 N(136) SIG .290	.1737 N(135) SIG .044	.2355 N(135) SIG .006
.0625 N(132) SIG .476	.1966 N(132) SIG .024	.0900 N(137) SIG .296	.2061 N(136) SIG .016	.1811 N(136) SIG .035
.0677 N(132) SIG .441	-.0689 N(132) SIG .433	.0261 N(137) SIG .762	.1254 N(136) SIG .146	.0691 N(136) SIG .424
.1546 N(132) SIG .077	.1772 N(132) SIG .042	-.0484 N(137) SIG .574	.1560 N(136) SIG .070	.1258 N(136) SIG .144
.1186 N(131) SIG .177	.1914 N(131) SIG .029	.1302 N(136) SIG .131	.0819 N(135) SIG .345	.0147 N(135) SIG .866
.1479 N(132) SIG .091	.0452 N(132) SIG .607	.0157 N(137) SIG .856	.0604 N(136) SIG .485	.1317 N(136) SIG .126
.1425 N(132) SIG .103	.0931 N(132) SIG .288	.0196 N(137) SIG .820	.0952 N(136) SIG .270	.0933 N(136) SIG .280
.0200 N(132) SIG .820	.0094 N(132) SIG .915	.1118 N(137) SIG .193	.2239 N(136) SIG .009	.1813 N(136) SIG .035
-.0194 N(132) SIG .826	.1246 N(132) SIG .154	-.0159 N(137) SIG .854	.1564 N(136) SIG .069	.0693 N(136) SIG .423
.2814 N(132) SIG .001	.2304 N(132) SIG .008	.2678 N(137) SIG .002	.2262 N(136) SIG .008	.2418 N(136) SIG .002

2-JUL-87 Appendix 11
11:08:54 STRATHCLYDE UNIVERSITY

DEC VAX-11/780 VMS V4.3

----- S P E A R M A N C O R R E L A T I O N

	V70	V71	V72	V73	V74
V9	.0349 N(134) SIG .689	-.0484 N(134) SIG .579	.1207 N(135) SIG .163	-.0827 N(134) SIG .342	-.1664 N(135) SIG .054
V10	-.0489 N(135) SIG .573	-.0584 N(135) SIG .501	-.0608 N(136) SIG .482	.0447 N(135) SIG .607	-.0907 N(136) SIG .294
V11	-.0719 N(135) SIG .407	-.0519 N(135) SIG .550	.0753 N(136) SIG .384	.0176 N(135) SIG .839	-.1359 N(136) SIG .115
V12	-.0229 N(135) SIG .792	-.1033 N(135) SIG .233	.0012 N(136) SIG .989	.1612 N(135) SIG .062	-.0886 N(136) SIG .305
V13	-.0476 N(134) SIG .585	-.1074 N(134) SIG .217	-.0705 N(135) SIG .416	-.0673 N(134) SIG .439	-.0437 N(135) SIG .614
V14	-.0630 N(135) SIG .468	-.0822 N(135) SIG .343	.0726 N(136) SIG .401	.0468 N(135) SIG .590	-.1692 N(136) SIG .049
V15	.0367 N(135) SIG .673	.0381 N(135) SIG .661	-.0093 N(136) SIG .914	.1227 N(135) SIG .156	-.0140 N(136) SIG .871
V16	-.0497 N(135) SIG .567	.0278 N(135) SIG .749	.0564 N(136) SIG .514	-.0799 N(135) SIG .357	-.1185 N(136) SIG .169
V17	.0262 N(135) SIG .763	.0900 N(135) SIG .299	.0612 N(136) SIG .479	.0111 N(135) SIG .898	-.1606 N(136) SIG .062
V18	.0722 N(135) SIG .405	.0241 N(135) SIG .782	.0207 N(136) SIG .811	.0959 N(135) SIG .269	-.0212 N(136) SIG .806

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2-JUL-87 Appendix 12
11:12:28 STRATHCLYDE UNIVERSITY DEC VAX-11/780 VMS V4.3

----- S P E A R M A N C O R R E L A T I O N C O E F F I C I E N T S -----

	V75	V76	V77	V78	V79	V80	V81	V82
V9	.0551 N(135) SIG .526	.2547 N(134) SIG .003	.1197 N(134) SIG .168	.1140 N(134) SIG .190	-.0922 N(134) SIG .289	-.0920 N(134) SIG .290	.1190 N(134) SIG .171	.0388 N(134) SIG .656
V10	.1061 N(136) SIG .219	.2372 N(135) SIG .006	-.0109 N(135) SIG .900	.1002 N(135) SIG .247	.0401 N(135) SIG .644	.1715 N(135) SIG .047	.0583 N(135) SIG .502	.1358 N(135) SIG .116
V11	.1486 N(136) SIG .084	.2036 N(135) SIG .018	.0551 N(135) SIG .526	.1999 N(135) SIG .020	.1237 N(135) SIG .153	.0062 N(135) SIG .943	.0990 N(135) SIG .253	.0231 N(135) SIG .791
V12	.1330 N(136) SIG .123	.1351 N(135) SIG .118	.1507 N(135) SIG .081	-.0328 N(135) SIG .706	.0703 N(135) SIG .418	.2682 N(135) SIG .002	.0551 N(135) SIG .526	.1249 N(135) SIG .149
V13	.0493 N(135) SIG .570	.1350 N(134) SIG .120	.1297 N(134) SIG .135	.0178 N(134) SIG .838	-.0488 N(134) SIG .575	.1282 N(134) SIG .140	.1191 N(134) SIG .170	.0712 N(134) SIG .414
V14	.1687 N(136) SIG .050	.1591 N(135) SIG .065	.1277 N(135) SIG .140	.2220 N(135) SIG .010	.0753 N(135) SIG .385	.0431 N(135) SIG .620	.1928 N(135) SIG .025	.0098 N(135) SIG .910
V15	.1483 N(136) SIG .085	-.0174 N(135) SIG .841	.0282 N(135) SIG .746	.0532 N(135) SIG .540	-.0427 N(135) SIG .623	.1320 N(135) SIG .127	.1604 N(135) SIG .063	.2078 N(135) SIG .016
V16	.1700 N(136) SIG .048	.1268 N(135) SIG .143	.1377 N(135) SIG .111	.3331 N(135) SIG .000	.1856 N(135) SIG .031	.1050 N(135) SIG .226	.1851 N(135) SIG .032	.1266 N(135) SIG .143
V17	.1143 N(136) SIG .185	.1103 N(135) SIG .203	.0440 N(135) SIG .613	.1237 N(135) SIG .153	-.0370 N(135) SIG .670	-.0927 N(135) SIG .285	.0442 N(135) SIG .610	-.0285 N(135) SIG .743
V18	.0132 N(136) SIG .879	.2403 N(135) SIG .005	.0130 N(135) SIG .881	.2985 N(135) SIG .000	-.0153 N(135) SIG .861	.0178 N(135) SIG .838	.2829 N(135) SIG .001	.1994 N(135) SIG .020

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DEPARTMENT OF COMMERCE

[illegible]

----- S P E A R M A N C O R R E L A T I O N C O E F F I C I E N T S -----

	V143	V144	V145	V146	V147	V148	V149	V150	V151	V152	V153	V154	V155	V156	V157	V158	V159
V9	-.0211 N(129) SIG .812	-.0249 N(128) SIG .780	.0712 N(129) SIG .423	.1961 N(129) SIG .026	.1588 N(129) SIG .072	.0055 N(129) SIG .951	-.0700 N(129) SIG .431	.0178 N(129) SIG .841	.0045 N(129) SIG .960	.0307 N(129) SIG .730	-.0003 N(129) SIG .998	.1163 N(128) SIG .191	.0463 N(129) SIG .602	-.1003 N(128) SIG .260	.1333 N(129) SIG .132	-.0397 N(129) SIG .655	-.0949 N(129) SIG .285
V10	.1249 N(130) SIG .157	.1174 N(129) SIG .185	.0944 N(130) SIG .285	.1646 N(130) SIG .061	.1446 N(130) SIG .101	.0732 N(130) SIG .408	.0467 N(130) SIG .597	.1363 N(130) SIG .122	.0717 N(130) SIG .418	.0111 N(130) SIG .900	.1509 N(130) SIG .087	-.0176 N(129) SIG .843	.0782 N(130) SIG .376	.1475 N(129) SIG .095	.0825 N(130) SIG .351	.1039 N(130) SIG .239	.0236 N(130) SIG .790
V11	-.1135 N(130) SIG .198	-.0543 N(129) SIG .541	-.0276 N(130) SIG .755	.0546 N(130) SIG .537	.1855 N(130) SIG .035	-.1435 N(130) SIG .103	-.0378 N(130) SIG .670	.1017 N(130) SIG .250	.0195 N(130) SIG .826	.1321 N(130) SIG .134	-.0462 N(130) SIG .602	.0595 N(129) SIG .503	-.0580 N(130) SIG .512	-.0666 N(129) SIG .453	-.0171 N(130) SIG .847	-.0963 N(130) SIG .276	-.1567 N(130) SIG .075
V12	.1454 N(130) SIG .099	-.0489 N(129) SIG .582	.1326 N(130) SIG .133	-.0063 N(130) SIG .943	.0000 N(130) SIG1.000	.1008 N(130) SIG .254	-.0338 N(130) SIG .703	.0492 N(130) SIG .578	.1225 N(130) SIG .165	-.1111 N(130) SIG .208	.0712 N(130) SIG .421	-.0526 N(129) SIG .554	.0700 N(130) SIG .429	.1461 N(129) SIG .099	.0590 N(130) SIG .505	.0973 N(130) SIG .271	.0751 N(130) SIG .396
V13	-.0038 N(129) SIG .966	-.0104 N(128) SIG .907	-.0909 N(129) SIG .306	-.1485 N(129) SIG .093	.0066 N(129) SIG .941	.1470 N(129) SIG .096	.0518 N(129) SIG .560	.0068 N(129) SIG .939	-.0681 N(129) SIG .443	-.1266 N(129) SIG .153	-.0130 N(129) SIG .884	.0131 N(128) SIG .883	.0415 N(129) SIG .641	.1024 N(128) SIG .250	.1312 N(129) SIG .138	.0400 N(129) SIG .653	.0247 N(129) SIG .781
V14	-.0378 N(130) SIG .670	-.0473 N(129) SIG .595	.0226 N(130) SIG .799	.0406 N(130) SIG .647	.1509 N(130) SIG .087	-.0968 N(130) SIG .273	-.0165 N(130) SIG .852	-.0010 N(130) SIG .991	-.0020 N(130) SIG .982	-.0097 N(130) SIG .913	-.0678 N(130) SIG .444	-.0447 N(129) SIG .615	.0961 N(130) SIG .277	.0378 N(129) SIG .671	.0810 N(130) SIG .360	.0304 N(130) SIG .732	-.0354 N(130) SIG .689
V15	.1442 N(130) SIG .102	.0383 N(129) SIG .667	.0770 N(130) SIG .384	-.0025 N(130) SIG .978	-.0586 N(130) SIG .508	.0337 N(130) SIG .704	.0801 N(130) SIG .365	.0954 N(130) SIG .280	-.0593 N(130) SIG .503	-.0158 N(130) SIG .858	.1125 N(130) SIG .203	-.0292 N(129) SIG .742	.1383 N(130) SIG .117	.1157 N(129) SIG .192	.1703 N(130) SIG .053	.0945 N(130) SIG .285	.0574 N(130) SIG .517
V16	-.0344 N(130) SIG .698	-.1937 N(129) SIG .028	-.0094 N(130) SIG .916	.1275 N(130) SIG .148	.2199 N(130) SIG .012	.0024 N(130) SIG .979	.0389 N(130) SIG .660	.0039 N(130) SIG .965	.0412 N(130) SIG .642	.0928 N(130) SIG .294	-.1084 N(130) SIG .220	.0366 N(129) SIG .680	.0283 N(130) SIG .749	.0136 N(129) SIG .878	.1055 N(130) SIG .232	.0859 N(130) SIG .331	.0326 N(130) SIG .713
V17	.0716 N(130) SIG .418	.0017 N(129) SIG .985	.0613 N(130) SIG .488	.1624 N(130) SIG .065	.1885 N(130) SIG .032	-.0662 N(130) SIG .455	.0447 N(130) SIG .614	.0508 N(130) SIG .566	.0454 N(130) SIG .608	.1807 N(130) SIG .040	.0464 N(130) SIG .600	.0971 N(129) SIG .274	.0434 N(130) SIG .624	.0111 N(129) SIG .901	.1880 N(130) SIG .032	.0401 N(130) SIG .650	.0028 N(130) SIG .975
V18	.2708 N(130) SIG .002	.0561 N(129) SIG .528	.1971 N(130) SIG .025	.1932 N(130) SIG .028	.2418 N(130) SIG .006	.0692 N(130) SIG .434	.1270 N(130) SIG .150	.1379 N(130) SIG .118	.2138 N(130) SIG .015	.0419 N(130) SIG .636	.0383 N(130) SIG .665	.2469 N(129) SIG .005	.0863 N(130) SIG .329	.2476 N(129) SIG .005	.2389 N(130) SIG .006	.2373 N(130) SIG .007	.1811 N(130) SIG .039

----- SPEARMAN CORRELATION COEFFICIENTS -----

	V55	V56	V57	V58	V59	V60	V61	V62	V63	V64	V65	V66	V67	V68	V69
V143	-.0721 NC (157) SIG .105	.2205 NC (158) SIG .003	.2072 NC (157) SIG .005	-.0249 NC (157) SIG .349	.0384 NC (154) SIG .318	-.0937 NC (157) SIG .122	.0940 NC (157) SIG .121	.1325 NC (156) SIG .050	.0890 NC (155) SIG .135	.0291 NC (158) SIG .358	.1414 NC (152) SIG .041	.1589 NC (153) SIG .025	-.0305 NC (158) SIG .392	-.1588 NC (157) SIG .023	.0958 NC (157) SIG .116
V144	.0670 NC (156) SIG .203	-.0628 NC (157) SIG .217	-.0147 NC (156) SIG .428	.0522 NC (156) SIG .259	-.0547 NC (153) SIG .251	.0114 NC (156) SIG .444	-.0142 NC (156) SIG .430	.0578 NC (155) SIG .237	-.0426 NC (154) SIG .300	.0327 NC (157) SIG .342	.0012 NC (151) SIG .494	.1194 NC (152) SIG .071	-.0553 NC (157) SIG .246	-.0660 NC (154) SIG .206	.0274 NC (154) SIG .367
V145	-.0852 NC (157) SIG .144	.1155 NC (158) SIG .074	.1236 NC (157) SIG .061	-.0357 NC (157) SIG .329	-.0656 NC (154) SIG .210	.1560 NC (157) SIG .026	-.0646 NC (157) SIG .211	.1379 NC (156) SIG .043	.1032 NC (155) SIG .101	.0091 NC (158) SIG .455	.0723 NC (152) SIG .188	.0987 NC (153) SIG .112	-.0691 NC (158) SIG .194	.0780 NC (157) SIG .166	-.0009 NC (157) SIG .496
V146	-.0947 NC (157) SIG .119	.1451 NC (158) SIG .034	.2607 NC (157) SIG .000	.0230 NC (157) SIG .388	-.0079 NC (154) SIG .461	.1847 NC (157) SIG .010	-.0991 NC (157) SIG .108	.2084 NC (156) SIG .005	.1010 NC (155) SIG .106	.1033 NC (158) SIG .098	.0893 NC (152) SIG .137	.0623 NC (153) SIG .222	.1217 NC (158) SIG .064	.1920 NC (157) SIG .008	.2798 NC (157) SIG .000
V147	.0379 NC (157) SIG .319	.0016 NC (158) SIG .492	-.0997 NC (157) SIG .107	.0732 NC (157) SIG .181	-.1427 NC (154) SIG .039	.2062 NC (157) SIG .005	.2348 NC (157) SIG .002	.2294 NC (156) SIG .002	.0828 NC (155) SIG .153	.1205 NC (158) SIG .066	.1939 NC (152) SIG .007	.0207 NC (153) SIG .400	.1762 NC (158) SIG .013	.1606 NC (157) SIG .022	.2240 NC (157) SIG .002
V148	-.1202 NC (156) SIG .067	.0990 NC (157) SIG .109	-.0191 NC (156) SIG .406	.0337 NC (156) SIG .338	.2808 NC (153) SIG .000	.2210 NC (156) SIG .003	-.0063 NC (156) SIG .469	.0103 NC (155) SIG .449	-.0698 NC (154) SIG .195	-.0239 NC (157) SIG .383	.0010 NC (151) SIG .495	.1242 NC (152) SIG .064	.1432 NC (157) SIG .037	-.0770 NC (156) SIG .170	-.0491 NC (156) SIG .271
V149	-.0848 NC (157) SIG .146	.0483 NC (158) SIG .273	.0626 NC (157) SIG .218	-.0367 NC (157) SIG .324	.0093 NC (154) SIG .455	.0305 NC (157) SIG .352	.0178 NC (157) SIG .413	.0838 NC (156) SIG .149	.1195 NC (155) SIG .069	-.0354 NC (158) SIG .329	.1779 NC (152) SIG .014	-.0458 NC (153) SIG .287	.0520 NC (158) SIG .258	.0672 NC (157) SIG .201	.0715 NC (157) SIG .187
V150	-.0453 NC (157) SIG .296	.1563 NC (158) SIG .025	.1426 NC (157) SIG .037	.0759 NC (157) SIG .173	-.0512 NC (154) SIG .264	.0528 NC (157) SIG .256	.1332 NC (157) SIG .048	.0756 NC (156) SIG .178	-.0038 NC (155) SIG .481	.1293 NC (158) SIG .053	.2543 NC (152) SIG .001	.0587 NC (153) SIG .235	.1407 NC (158) SIG .039	.0691 NC (157) SIG .195	.0208 NC (157) SIG .398
V151	-.0129 NC (156) SIG .437	.1878 NC (157) SIG .009	.1720 NC (156) SIG .016	.2048 NC (156) SIG .005	-.0087 NC (153) SIG .457	-.0254 NC (156) SIG .376	.0618 NC (156) SIG .222	.0863 NC (155) SIG .143	-.0681 NC (154) SIG .201	.0215 NC (157) SIG .395	.2049 NC (151) SIG .006	.1564 NC (152) SIG .027	.2400 NC (157) SIG .001	.1006 NC (156) SIG .106	.0847 NC (156) SIG .146
V152	.0678 NC (156) SIG .200	-.0012 NC (157) SIG .494	-.1064 NC (156) SIG .093	.1437 NC (156) SIG .037	-.0587 NC (153) SIG .235	-.0545 NC (156) SIG .249	.0189 NC (156) SIG .408	.0473 NC (155) SIG .280	-.1515 NC (154) SIG .030	.1057 NC (157) SIG .094	-.0996 NC (151) SIG .137	-.0305 NC (152) SIG .355	.0138 NC (157) SIG .432	.0257 NC (156) SIG .375	-.0011 NC (156) SIG .494
V153	-.1521 NC (157) SIG .029	.1573 NC (158) SIG .024	.1100 NC (157) SIG .085	.0816 NC (157) SIG .155	.1228 NC (154) SIG .065	.0955 NC (157) SIG .117	.0507 NC (157) SIG .264	.0994 NC (156) SIG .108	-.0192 NC (155) SIG .406	-.0691 NC (158) SIG .194	-.0106 NC (152) SIG .448	.0307 NC (153) SIG .353	.1081 NC (158) SIG .088	.0588 NC (157) SIG .232	.0320 NC (157) SIG .345
V154	-.0272 NC (156) SIG .368	.0590 NC (157) SIG .232	.1215 NC (156) SIG .065	-.0981 NC (156) SIG .111	.0135 NC (153) SIG .434	.0815 NC (156) SIG .156	.2401 NC (156) SIG .001	.2166 NC (155) SIG .003	.1125 NC (154) SIG .082	.0495 NC (157) SIG .269	.1333 NC (151) SIG .051	-.0163 NC (152) SIG .421	.0904 NC (157) SIG .130	.2456 NC (156) SIG .001	.3005 NC (156) SIG .000
V155	-.1071 NC (157) SIG .091	-.0887 NC (158) SIG .134	-.0291 NC (157) SIG .399	.0048 NC (157) SIG .476	.0566 NC (154) SIG .243	.0528 NC (157) SIG .256	-.0542 NC (157) SIG .250	.0393 NC (156) SIG .313	.0864 NC (155) SIG .143	.0321 NC (158) SIG .344	.2228 NC (152) SIG .003	.1441 NC (153) SIG .036	.0916 NC (157) SIG .126	-.0242 NC (157) SIG .382	.0645 NC (157) SIG .211
V156	-.0949 NC (156) SIG .119	.1513 NC (157) SIG .029	.1709 NC (156) SIG .016	.0159 NC (156) SIG .422	-.0676 NC (153) SIG .203	.0844 NC (156) SIG .148	.0392 NC (156) SIG .314	.0605 NC (155) SIG .227	.0924 NC (154) SIG .127	-.0704 NC (157) SIG .191	.2303 NC (151) SIG .002	.0113 NC (152) SIG .445	.1685 NC (157) SIG .017	.0980 NC (156) SIG .112	-.0090 NC (156) SIG .456
V157	-.0242 NC (157) SIG .382	.1498 NC (158) SIG .030	.1153 NC (157) SIG .075	-.0488 NC (157) SIG .272	.0005 NC (154) SIG .497	.0933 NC (157) SIG .123	.1739 NC (157) SIG .015	.1125 NC (156) SIG .081	.1040 NC (155) SIG .099	.0426 NC (158) SIG .298	.1252 NC (152) SIG .051	.0514 NC (153) SIG .264	.1797 NC (158) SIG .012	.1390 NC (157) SIG .041	.1028 NC (157) SIG .100
V158	-.0846 NC (157) SIG .146	.1481 NC (158) SIG .032	.2662 NC (157) SIG .000	-.1231 NC (157) SIG .062	.1344 NC (154) SIG .048	.1297 NC (157) SIG .053	.1332 NC (157) SIG .048	.0905 NC (156) SIG .130	-.0919 NC (155) SIG .128	.0311 NC (158) SIG .349	.2119 NC (152) SIG .004	.0837 NC (153) SIG .152	.1066 NC (158) SIG .091	.1391 NC (157) SIG .041	.0988 NC (157) SIG .109
V159	-.0182 NC (157) SIG .410	.1030 NC (158) SIG .099	.2354 NC (157) SIG .001	-.1348 NC (157) SIG .046	.1338 NC (154) SIG .049	.2045 NC (157) SIG .005	.0161 NC (157) SIG .420	.0595 NC (156) SIG .230	.2202 NC (155) SIG .003	.0112 NC (158) SIG .444	.2758 NC (152) SIG .000	.1650 NC (153) SIG .021	.1294 NC (158) SIG .053	.0963 NC (157) SIG .115	.0623 NC (157) SIG .219

***** P L A N M A N C O R R E L A T I O N C O E F F I C I E N T S *****

	V176	V177	V178	V179	V180	V181	V182	V183	V184	V185	V186	V187	V188	V189	V190	V191	V192
V193	MC 653 SIC .195	MC 653 SIC .232	MC 653 SIC .655	MC 653 SIC .655	MC 653 SIC .806	MC 653 SIC .263	MC 653 SIC .250	MC 653 SIC .645	MC 653 SIC .045	MC 653 SIC .212	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045
V194	MC 653 SIC .557	MC 653 SIC .225	MC 653 SIC .476	MC 653 SIC .343	MC 653 SIC .514	MC 653 SIC .615	MC 653 SIC .674	MC 653 SIC .212	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045
V195	MC 653 SIC .169	MC 653 SIC .116	MC 653 SIC .507	MC 653 SIC .574	MC 653 SIC .574	MC 653 SIC .017	MC 653 SIC .122	MC 653 SIC .183	MC 653 SIC .183	MC 653 SIC .472	MC 653 SIC .167	MC 653 SIC .946	MC 653 SIC .230	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045
V196	MC 653 SIC .156	MC 653 SIC .168	MC 653 SIC .657	MC 653 SIC .490	MC 653 SIC .641	MC 653 SIC .011	MC 653 SIC .086	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045	MC 653 SIC .045
V197	MC 653 SIC .031	MC 653 SIC .366	MC 653 SIC .080	MC 653 SIC .006	MC 653 SIC .786	MC 653 SIC .001	MC 653 SIC .112	MC 653 SIC .149	MC 653 SIC .006	MC 653 SIC .026	MC 653 SIC .016	MC 653 SIC .537	MC 653 SIC .196	MC 653 SIC .101	MC 653 SIC .063	MC 653 SIC .546	MC 653 SIC .440
V198	MC 653 SIC .455	MC 653 SIC .027	MC 653 SIC .914	MC 653 SIC .914	MC 653 SIC .870	MC 653 SIC .602	MC 653 SIC .542	MC 653 SIC .159	MC 653 SIC .613	MC 653 SIC .859	MC 653 SIC .253	MC 653 SIC .977	MC 653 SIC .981	MC 653 SIC .400	MC 653 SIC .393	MC 653 SIC .312	MC 653 SIC .276
V199	MC 653 SIC .074	MC 653 SIC .074	MC 653 SIC .074	MC 653 SIC .074	MC 653 SIC .074	MC 653 SIC .074	MC 653 SIC .074	MC 653 SIC .074	MC 653 SIC .074	MC 653 SIC .074	MC 653 SIC .074	MC 653 SIC .074	MC 653 SIC .074	MC 653 SIC .074	MC 653 SIC .074	MC 653 SIC .074	MC 653 SIC .074
V200	MC 653 SIC .016	MC 653 SIC .006	MC 653 SIC .006	MC 653 SIC .006	MC 653 SIC .006	MC 653 SIC .006	MC 653 SIC .006	MC 653 SIC .006	MC 653 SIC .006	MC 653 SIC .006	MC 653 SIC .006	MC 653 SIC .006	MC 653 SIC .006	MC 653 SIC .006	MC 653 SIC .006	MC 653 SIC .006	MC 653 SIC .006
V201	MC 653 SIC .178	MC 653 SIC .173	MC 653 SIC .173	MC 653 SIC .173	MC 653 SIC .173	MC 653 SIC .173	MC 653 SIC .173	MC 653 SIC .173	MC 653 SIC .173	MC 653 SIC .173	MC 653 SIC .173	MC 653 SIC .173	MC 653 SIC .173	MC 653 SIC .173	MC 653 SIC .173	MC 653 SIC .173	MC 653 SIC .173
V202	MC 653 SIC .557	MC 653 SIC .475	MC 653 SIC .617	MC 653 SIC .091	MC 653 SIC .097	MC 653 SIC .005	MC 653 SIC .084	MC 653 SIC .033	MC 653 SIC .033	MC 653 SIC .385	MC 653 SIC .000	MC 653 SIC .035	MC 653 SIC .035	MC 653 SIC .035	MC 653 SIC .035	MC 653 SIC .035	MC 653 SIC .035
V203	MC 653 SIC .194	MC 653 SIC .301	MC 653 SIC .375	MC 653 SIC .588	MC 653 SIC .119	MC 653 SIC .037	MC 653 SIC .708	MC 653 SIC .003	MC 653 SIC .003	MC 653 SIC .408	MC 653 SIC .071	MC 653 SIC .029	MC 653 SIC .790	MC 653 SIC .928	MC 653 SIC .449	MC 653 SIC .033	MC 653 SIC .126
V204	MC 653 SIC .020	MC 653 SIC .841	MC 653 SIC .037	MC 653 SIC .104	MC 653 SIC .974	MC 653 SIC .106	MC 653 SIC .762	MC 653 SIC .648	MC 653 SIC .648	MC 653 SIC .115	MC 653 SIC .948	MC 653 SIC .739	MC 653 SIC .361	MC 653 SIC .707	MC 653 SIC .436	MC 653 SIC .422	MC 653 SIC .812
V205	MC 653 SIC .570	MC 653 SIC .186	MC 653 SIC .332	MC 653 SIC .325	MC 653 SIC .558	MC 653 SIC .477	MC 653 SIC .515	MC 653 SIC .408	MC 653 SIC .408	MC 653 SIC .408	MC 653 SIC .133	MC 653 SIC .037	MC 653 SIC .373	MC 653 SIC .113	MC 653 SIC .253	MC 653 SIC .045	MC 653 SIC .367
V206	MC 653 SIC .109	MC 653 SIC .442	MC 653 SIC .934	MC 653 SIC .642	MC 653 SIC .399	MC 653 SIC .287	MC 653 SIC .730	MC 653 SIC .515	MC 653 SIC .515	MC 653 SIC .203	MC 653 SIC .845	MC 653 SIC .863	MC 653 SIC .365	MC 653 SIC .613	MC 653 SIC .179	MC 653 SIC .916	MC 653 SIC .320
V207	MC 653 SIC .264	MC 653 SIC .1557	MC 653 SIC .1041	MC 653 SIC .3268	MC 653 SIC .0828	MC 653 SIC .0476	MC 653 SIC .1019	MC 653 SIC .0533	MC 653 SIC .0533	MC 653 SIC .1403	MC 653 SIC .0259	MC 653 SIC .0336	MC 653 SIC .097	MC 653 SIC .1806	MC 653 SIC .2080	MC 653 SIC .1378	MC 653 SIC .0011
V208	MC 653 SIC .1031	MC 653 SIC .0294	MC 653 SIC .0651	MC 653 SIC .1341	MC 653 SIC .0946	MC 653 SIC .0646	MC 653 SIC .1975	MC 653 SIC .0439	MC 653 SIC .0439	MC 653 SIC .3931	MC 653 SIC .0540	MC 653 SIC .2358	MC 653 SIC .1258	MC 653 SIC .2783	MC 653 SIC .438	MC 653 SIC .722	MC 653 SIC .0868
V209	MC 653 SIC .163	MC 653 SIC .034	MC 653 SIC .226	MC 653 SIC .552	MC 653 SIC .194	MC 653 SIC .100	MC 653 SIC .404	MC 653 SIC .418	MC 653 SIC .418	MC 653 SIC .477	MC 653 SIC .080	MC 653 SIC .456	MC 653 SIC .398	MC 653 SIC .091	MC 653 SIC .114	MC 653 SIC .001	MC 653 SIC .002

----- SPEARMAN CORRELATION COEFFICIENTS -----

	V212	V213	V214	V215	V216	V217	V218	V219	V220	V221	V222	V223	V224	V225	V226	V227	V228	V229	V230
V143	-.0499 N(155) SIG .941	.0002 N(156) SIG .919	.1150 N(155) SIG .150	.1401 N(156) SIG .065	-.0318 N(156) SIG .894	-.0443 N(156) SIG .903	-.0271 N(156) SIG .737	.0419 N(156) SIG .604	-.0448 N(156) SIG .965	-.0177 N(156) SIG .827	.0411 N(155) SIG .610	-.0169 N(156) SIG .834	.1226 N(156) SIG .127	-.0022 N(156) SIG .978	-.0412 N(156) SIG .610	.0711 N(156) SIG .370	-.0569 N(156) SIG .481	-.0002 N(156) SIG .273	-.0498 N(156) SIG .537
V144	-.0094 N(155) SIG .907	.0431 N(155) SIG .955	-.1609 N(155) SIG .046	-.0863 N(155) SIG .286	-.0190 N(155) SIG .814	-.1094 N(155) SIG .175	-.0190 N(155) SIG .815	-.1153 N(155) SIG .153	-.0209 N(155) SIG .794	.0641 N(155) SIG .428	-.1180 N(155) SIG .144	-.0403 N(155) SIG .619	.0867 N(155) SIG .283	-.1037 N(155) SIG .199	-.0396 N(155) SIG .624	-.0490 N(155) SIG .945	-.0625 N(155) SIG .440	-.0064 N(155) SIG .937	.0278 N(155) SIG .711
V145	.0611 N(156) SIG .448	.0753 N(156) SIG .350	.1371 N(156) SIG .008	.0627 N(156) SIG .436	-.0214 N(156) SIG .791	-.0297 N(156) SIG .713	-.0984 N(156) SIG .221	.0515 N(156) SIG .523	.0663 N(156) SIG .411	.0038 N(156) SIG .963	.1635 N(156) SIG .034	-.0440 N(156) SIG .585	.0834 N(156) SIG .309	.1353 N(156) SIG .032	.0138 N(156) SIG .864	.1015 N(156) SIG .207	.0117 N(156) SIG .805	.0118 N(156) SIG .884	.0234 N(156) SIG .172
V146	.1429 N(156) SIG .045	.2334 N(156) SIG .003	.3708 N(156) SIG .000	.1974 N(156) SIG .014	-.1046 N(156) SIG .194	-.0481 N(156) SIG .551	-.0796 N(156) SIG .323	.1404 N(156) SIG .080	-.2021 N(156) SIG .011	.0256 N(156) SIG .751	.1952 N(156) SIG .014	.1030 N(156) SIG .201	.1480 N(156) SIG .065	.1113 N(156) SIG .167	.0923 N(156) SIG .307	.1224 N(156) SIG .128	-.0022 N(156) SIG .978	.0066 N(156) SIG .915	.1902 N(156) SIG .024
V147	.0801 N(155) SIG .320	.1439 N(156) SIG .015	.5121 N(156) SIG .000	.0712 N(156) SIG .377	-.1922 N(156) SIG .016	.1096 N(156) SIG .173	-.1215 N(156) SIG .131	.1512 N(156) SIG .059	.1583 N(156) SIG .000	.1791 N(156) SIG .025	.3823 N(155) SIG .000	.1877 N(156) SIG .019	.0924 N(156) SIG .251	.1736 N(156) SIG .030	.1160 N(156) SIG .149	.2314 N(156) SIG .004	.0420 N(156) SIG .442	-.0279 N(155) SIG .730	.0188 N(156) SIG .610
V148	-.0993 N(155) SIG .219	.0691 N(155) SIG .393	-.1870 N(155) SIG .020	.1719 N(155) SIG .032	.4842 N(155) SIG .000	.1178 N(155) SIG .144	.3725 N(155) SIG .000	.1062 N(155) SIG .188	.0185 N(155) SIG .820	-.0056 N(155) SIG .945	-.0756 N(155) SIG .350	-.0513 N(155) SIG .526	.0579 N(155) SIG .475	.0395 N(155) SIG .626	.0260 N(155) SIG .748	.0048 N(155) SIG .713	-.0403 N(155) SIG .619	-.1762 N(155) SIG .028	-.0165 N(155) SIG .838
V149	-.1173 N(156) SIG .145	.0392 N(156) SIG .627	.0415 N(156) SIG .444	-.0031 N(156) SIG .970	-.0431 N(156) SIG .434	-.2036 N(156) SIG .011	-.0430 N(156) SIG .594	.0181 N(156) SIG .823	.0486 N(156) SIG .395	-.0373 N(156) SIG .644	.0711 N(155) SIG .378	-.0322 N(156) SIG .690	.0233 N(156) SIG .767	.0327 N(156) SIG .686	.1233 N(156) SIG .125	-.0050 N(156) SIG .951	-.0374 N(156) SIG .643	-.0114 N(156) SIG .887	.0205 N(156) SIG .800
V150	.0542 N(156) SIG .931	.0938 N(156) SIG .244	.1093 N(156) SIG .175	.1660 N(156) SIG .038	.0511 N(156) SIG .526	.1448 N(156) SIG .067	-.0500 N(156) SIG .535	.1428 N(156) SIG .075	.2963 N(156) SIG .000	.2780 N(156) SIG .000	-.2940 N(155) SIG .000	-.1441 N(156) SIG .073	-.0064 N(156) SIG .936	-.0544 N(156) SIG .500	.0269 N(156) SIG .739	-.0865 N(156) SIG .283	.0416 N(156) SIG .406	.1315 N(156) SIG .107	-.0163 N(156) SIG .840
V151	.1050 N(155) SIG .189	.1034 N(155) SIG .200	.1509 N(155) SIG .062	.1008 N(155) SIG .212	.0029 N(155) SIG .971	-.0951 N(155) SIG .239	-.0840 N(155) SIG .299	.0825 N(155) SIG .307	.1258 N(155) SIG .119	.0757 N(155) SIG .349	.1128 N(155) SIG .152	-.0226 N(155) SIG .781	.1124 N(155) SIG .164	.1484 N(155) SIG .045	.1456 N(155) SIG .071	-.0336 N(155) SIG .678	-.1430 N(155) SIG .076	-.0303 N(155) SIG .708	.0760 N(155) SIG .347
V152	.1190 N(155) SIG .138	-.2135 N(155) SIG .008	.0026 N(155) SIG .974	-.1757 N(155) SIG .829	-.0588 N(155) SIG .468	-.0238 N(155) SIG .769	-.0079 N(155) SIG .923	-.0539 N(155) SIG .506	-.0317 N(155) SIG .696	-.0225 N(155) SIG .781	.0730 N(155) SIG .387	-.1296 N(155) SIG .108	-.2375 N(155) SIG .003	-.1872 N(155) SIG .020	.1740 N(155) SIG .030	-.1803 N(155) SIG .025	-.2225 N(155) SIG .005	-.1252 N(155) SIG .121	-.2349 N(155) SIG .003
V153	-.0217 N(156) SIG .788	-.1516 N(156) SIG .059	-.1565 N(156) SIG .051	.0082 N(156) SIG .275	.1507 N(156) SIG .060	-.0486 N(156) SIG .547	.1200 N(156) SIG .133	.0808 N(156) SIG .316	-.0301 N(156) SIG .710	-.0421 N(156) SIG .601	-.1935 N(155) SIG .017	-.0917 N(156) SIG .255	.0352 N(156) SIG .662	-.0368 N(156) SIG .648	-.0086 N(156) SIG .915	-.1640 N(156) SIG .041	-.0471 N(156) SIG .959	.0446 N(156) SIG .563	-.1072 N(156) SIG .183
V154	-.0308 N(155) SIG .784	.0794 N(155) SIG .326	.2726 N(155) SIG .601	.1472 N(155) SIG .048	-.0874 N(155) SIG .278	-.0756 N(155) SIG .350	-.0405 N(155) SIG .655	.1643 N(155) SIG .039	.2032 N(155) SIG .011	.1100 N(155) SIG .173	.0781 N(155) SIG .334	.1205 N(155) SIG .135	-.2009 N(155) SIG .012	.1404 N(155) SIG .082	.1513 N(155) SIG .060	.0688 N(155) SIG .395	.0284 N(155) SIG .726	-.0076 N(155) SIG .925	.1467 N(155) SIG .070
V155	-.0099 N(156) SIG .902	.1302 N(156) SIG .105	-.0453 N(156) SIG .410	.1556 N(156) SIG .052	.2246 N(156) SIG .005	-.0764 N(156) SIG .343	.1853 N(156) SIG .021	.2627 N(156) SIG .001	.1425 N(156) SIG .076	.0894 N(156) SIG .267	-.0444 N(156) SIG .592	.1021 N(156) SIG .205	.1509 N(156) SIG .060	.0268 N(156) SIG .740	.2117 N(156) SIG .008	.0136 N(156) SIG .066	.0624 N(156) SIG .439	.1275 N(156) SIG .113	.1356 N(156) SIG .091
V156	-.1954 N(155) SIG .015	.1134 N(155) SIG .160	.1293 N(155) SIG .109	.1681 N(155) SIG .037	.0823 N(155) SIG .309	-.0622 N(155) SIG .442	.0898 N(155) SIG .286	.1891 N(155) SIG .018	.1595 N(155) SIG .047	.1291 N(155) SIG .109	.0085 N(155) SIG .316	.0910 N(155) SIG .260	.1652 N(155) SIG .040	-.0560 N(155) SIG .489	.0581 N(155) SIG .473	.1069 N(155) SIG .196	-.0554 N(155) SIG .494	.0417 N(155) SIG .607	-.0487 N(155) SIG .547
V157	.0111 N(156) SIG .881	.0436 N(156) SIG .430	.1381 N(156) SIG .086	.1343 N(156) SIG .095	.1139 N(156) SIG .157	.1042 N(156) SIG .195	.1516 N(156) SIG .059	.2374 N(156) SIG .003	.1591 N(156) SIG .047	.0697 N(156) SIG .387	.0914 N(155) SIG .433	-.2418 N(156) SIG .002	.2349 N(156) SIG .003	.3120 N(156) SIG .000	.2888 N(156) SIG .000	.2060 N(156) SIG .010	.0371 N(156) SIG .478	.1383 N(156) SIG .085	.1438 N(156) SIG .041
V158	-.0734 N(156) SIG .382	.0753 N(156) SIG .350	.1247 N(156) SIG .121	.1430 N(156) SIG .075	.1165 N(156) SIG .148	-.1058 N(156) SIG .189	.1692 N(156) SIG .035	.1886 N(156) SIG .018	-.0131 N(156) SIG .871	-.1343 N(156) SIG .095	.0192 N(156) SIG .811	.0694 N(156) SIG .389	.1289 N(156) SIG .109	.0082 N(156) SIG .919	.0758 N(156) SIG .347	.1253 N(156) SIG .119	-.0133 N(156) SIG .869	.0120 N(156) SIG .882	-.0886 N(156) SIG .211
V159	-.1820 N(156) SIG .023	-.0001 N(156) SIG .999	-.0313 N(156) SIG .698	.1335 N(156) SIG .697	-.0078 N(156) SIG .923	-.0311 N(156) SIG .700	.0345 N(156) SIG .669	.2055 N(156) SIG .010	.0702 N(156) SIG .384	-.0018 N(156) SIG .983	-.0223 N(155) SIG .782	.1511 N(156) SIG .060	.1090 N(156) SIG .000	.0501 N(156) SIG .536	.0912 N(156) SIG .250	.0800 N(156) SIG .321	.0171 N(156) SIG .479	.1349 N(156) SIG .093	-.0108 N(156) SIG .883

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	V260	V261	V262	V263	V264
V143	.1101 N(157) SIG .170	-.2407 N(157) SIG .002	.0663 N(157) SIG .409	.0653 N(157) SIG .416	.1594 N(157) SIG .046
V144	.0677 N(156) SIG .401	.0230 N(156) SIG .776	.0021 N(156) SIG .979	.0023 N(156) SIG .977	-.1065 N(156) SIG .186
V145	.1045 N(157) SIG .193	-.1203 N(157) SIG .133	.0554 N(157) SIG .491	-.0357 N(157) SIG .657	.0122 N(157) SIG .880
V146	-.1128 N(157) SIG .159	-.0894 N(157) SIG .266	.1659 N(157) SIG .038	.0003 N(157) SIG .997	.0600 N(157) SIG .455
V147	-.0301 N(157) SIG .708	-.1733 N(157) SIG .030	.1657 N(157) SIG .038	-.1077 N(157) SIG .179	.1372 N(157) SIG .087
V148	-.0814 N(156) SIG .313	-.0373 N(156) SIG .644	.0637 N(156) SIG .430	.0610 N(156) SIG .449	.0118 N(156) SIG .883
V149	.0741 N(157) SIG .356	-.0623 N(157) SIG .438	-.0194 N(157) SIG .809	-.0283 N(157) SIG .725	.0685 N(157) SIG .394
V150	.0422 N(157) SIG .600	-.0906 N(157) SIG .259	.0218 N(157) SIG .787	-.0504 N(157) SIG .530	.0301 N(157) SIG .708
V151	-.0514 N(156) SIG .524	-.2130 N(156) SIG .008	.3049 N(156) SIG .000	-.1253 N(156) SIG .119	.0422 N(156) SIG .601
V152	.1205 N(156) SIG .134	-.1154 N(156) SIG .151	.0400 N(156) SIG .620	-.1542 N(156) SIG .055	.0357 N(156) SIG .658
V153	.1630 N(157) SIG .041	-.0944 N(157) SIG .240	-.0358 N(157) SIG .657	-.0120 N(157) SIG .882	.0000 N(157) SIG 1.000
V154	.0713 N(156) SIG .376	-.1027 N(156) SIG .202	-.0197 N(156) SIG .808	-.0372 N(156) SIG .645	.1087 N(156) SIG .177
V155	.0238 N(157) SIG .768	-.0169 N(157) SIG .834	-.1471 N(157) SIG .066	.1775 N(157) SIG .026	.0036 N(157) SIG .965
V156	.0139 N(156) SIG .863	-.1834 N(156) SIG .022	.0905 N(156) SIG .261	.0266 N(156) SIG .742	.0812 N(156) SIG .314
V157	-.0151 N(157) SIG .851	.0212 N(157) SIG .793	-.1534 N(157) SIG .055	-.0213 N(157) SIG .791	.1416 N(157) SIG .077
V158	.0065 N(157) SIG .936	-.0528 N(157) SIG .511	.0024 N(157) SIG .976	.0474 N(157) SIG .555	.0330 N(157) SIG .682
V159	.0810 N(157) SIG .313	-.0405 N(157) SIG .614	-.0081 N(157) SIG .920	-.0249 N(157) SIG .757	-.0037 N(157) SIG .964

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	V160	V265	V266
V143	-.0032 N(156) SIG .484	.1103 N(155) SIG .086	.0743 N(155) SIG .179
V144	.0084 N(155) SIG .459	-.0005 N(154) SIG .497	-.0367 N(154) SIG .326
V145	.0142 N(156) SIG .430	.0921 N(155) SIG .127	.1342 N(155) SIG .048
V146	.2059 N(156) SIG .005	.3021 N(155) SIG .000	.2657 N(155) SIG .000
V147	.0981 N(156) SIG .112	.1376 N(155) SIG .044	.2242 N(155) SIG .003
V148	.0205 N(155) SIG .400	-.1266 N(154) SIG .059	-.1163 N(154) SIG .075
V149	-.0350 N(156) SIG .332	.0694 N(155) SIG .195	.0572 N(155) SIG .240
V150	.1256 N(156) SIG .059	.0559 N(155) SIG .245	.1133 N(155) SIG .080
V151	.2206 N(155) SIG .003	.1751 N(154) SIG .015	.2169 N(154) SIG .003
V152	-.1349 N(155) SIG .047	-.2418 N(154) SIG .001	-.0269 N(154) SIG .370
V153	-.1088 N(156) SIG .088	-.0802 N(155) SIG .161	-.0006 N(155) SIG .497
V154	-.1766 N(155) SIG .014	-.0036 N(154) SIG .483	.0166 N(154) SIG .419
V155	.0008 N(156) SIG .496	.0023 N(155) SIG .489	-.0466 N(155) SIG .282
V156	-.0723 N(155) SIG .186	-.0299 N(154) SIG .356	.0728 N(154) SIG .185
V157	-.1334 N(156) SIG .048	-.0179 N(155) SIG .413	-.0262 N(155) SIG .373
V158	-.0831 N(156) SIG .151	-.0176 N(155) SIG .414	-.0638 N(155) SIG .215
V159	-.0131 N(156) SIG .436	-.0297 N(155) SIG .357	.0424 N(155) SIG .300