

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

PRODUCT DEVELOPMENT AND THE  
NEW ZEALAND FOOD INDUSTRY

SANDRA J. WEST

1980

## ABSTRACT

New Zealand food companies experienced radical changes in the 1970's in relation to their traditional markets. Success in meeting the challenges and exploiting the opportunities created by these changes depends to a large extent on developing new markets and new product development skills.

The purpose of this research into product development in the New Zealand food industry was to identify, both overseas and in New Zealand, current methods of product development and to examine possible variables attributable to success. The research was designed to make it possible to analyse the organisation, structure, role and management of current practices in product development in the New Zealand food industry. Information was also gathered on the personnel involved in product development, including their attitudes toward the relevant variables for success of this important business function. By understanding the systems that currently exist in New Zealand firms, it was possible to identify areas of the company where improvements in product development skills might be made.

The study was conducted through a detailed questionnaire sent to a randomly selected sample of twenty four companies in the New Zealand food industry. This was followed by a personal interview with the company executive responsible for the product development function in each of the sample companies. The results were subjected to several data analysis techniques including the multivariate technique of factor analysis.

The product development process was considered in terms of both active and passive skills. Active skills (implementation) included the steps of planning, exploration, screening, analysis, development, testing, and commercialization. The passive skills (understanding) were seen as essential knowledge of design creativity, technology, and marketing. Companies of the sample indicated strength in the skills of technology but there was considerably less emphasis placed on design creativity. Products for export were generally the same as those produced for the domestic market and these were often copies of overseas products. There was evidence of some marketing strengths in the companies studied but marketing practices were weak in relation to knowledge of the consumer and in determining the market potential for new products.

The development process, in the sense of an orderly arrangement and management of activity, was shown to hardly exist in these companies generally. Management of the product development function in the companies was shown to be the responsibility of one person whose major role in the firm in many cases was in some other area. There was no evidence of product development departments or teams for the management of new product development.

A study of eighteen variables generally attributed to successful product development resulted in the identification of the following five factors as indications of what New Zealand managers thought to be



important for product development success in their own companies: an innovative and technological company orientation; a supportive company structure; consideration for the consumer; security for development; a well-rounded company marketing emphasis.

When these attitudes were measured against actual New Zealand practices as shown by this study, several correlations and discrepancies were noted. The research indicated that technological skills were heavily emphasized in product development but creativity and innovation were not. There was not a good supportive company structure and generally there was not a particularly well-rounded marketing emphasis for product development. Study of product failure indicated a lack of consideration for consumer needs in development.

This was the first study of product development and its role in the New Zealand food industry. A more comprehensive study will be needed to determine whether the conclusions are valid for the industry as a whole. In the interim, several recommendations are offered for improvement of success in product development in the New Zealand food industry.



PRODUCT DEVELOPMENT AND  
THE NEW ZEALAND FOOD INDUSTRY

Sandra J. West

In part fulfilment of the requirements  
for the Degree of Master of  
Agricultural Business and  
Administration, M.B.A. (Agric.)  
Department of Marketing  
Massey University  
New Zealand  
February, 1980

The information in this study is presented as a confidential  
data base for academic purposes and cannot be published else-  
where without permission of the author.

### ACKNOWLEDGEMENTS

I would like to express my gratitude to the companies who participated in my survey and to the executives who agreed to be interviewed.

I am indebted also to Dr. Mary D. Earle and Dr. Allan Anderson for their advice and assistance and to Mr. P.J. Gendall whose work on factor analysis was very helpful. Also to Mr. Brian Wilkinson and Mrs. Gaylene Harper.

I am grateful to those people in industry, university and government in the United States, Canada, and England who made their time and experience available to me.

## CONTENTS

	<u>Page</u>
LIST OF FIGURES	vi
LIST OF TABLES	vi
INTRODUCTION	1
 <u>PART ONE: THEORY AND PRACTICE OF PRODUCT DEVELOPMENT</u>	
CHAPTER ONE: PLANNING AND PRODUCT DEVELOPMENT	
1.1 Planning .....	6
1.1.1 Company Planning .....	7
1.1.2 Departmental Planning.....	8
1.1.3 Product Planning .....	8
1.2 Product Policy/Strategy .....	10
1.3 Summary .....	14
FOOTNOTES, CHAPTER ONE .....	16
CHAPTER TWO: SYSTEM OF PRODUCT DEVELOPMENT	
2.1 The Process of Development .....	17
2.2 Risk .....	18
2.3 Market Research .....	18
2.4 Marketing/Technology Interface .....	19
2.5 Cost .....	19
2.6 Knowledge .....	20
2.7 Summary .....	21
FOOTNOTES, CHAPTER TWO .....	22
CHAPTER THREE: MANAGEMENT OF PRODUCT DEVELOPMENT	
3.1 Product Management .....	23
3.2 Patterns for Organisation .....	23
3.3 Discussion of Four Popular Alternatives .....	25
3.3.1 New Product Department .....	25
3.3.2 New Product Committee .....	26
3.3.3 The Product Manager .....	26
3.3.4 The Venture Team or Task Force .....	28
3.4 Summary .....	28
FOOTNOTES, CHAPTER THREE .....	29



	<u>Page</u>
CHAPTER FOUR: SUCCESSFUL PRODUCT DEVELOPMENT	
4.1 Introduction .....	31
4.2 New Product Success .....	31
4.3 New Product Failure .....	33
4.4 Combination of Success/Fail Variables .....	34
FOOTNOTES, CHAPTER FOUR .....	36
<u>PART TWO: THE NEW ZEALAND STUDY</u>	
CHAPTER FIVE: PRODUCT DEVELOPMENT IN NEW ZEALAND	
5.1 New Zealand 'Limitations' .....	38
5.2 Design for New Products in New Zealand .....	39
5.3 Technology for New Products in New Zealand .....	40
5.4 Marketing for New Products in New Zealand .....	42
5.5 Summary .....	43
FOOTNOTES, CHAPTER FIVE .....	45
CHAPTER SIX: RESEARCH OBJECTIVES AND METHODOLOGY	
6.1 Research Objectives .....	48
6.2 Sample of Companies .....	48
6.3 Questionnaire .....	49
6.4 Method .....	50
6.5 Analysis .....	50
6.5.1 Statistical Analysis of Questionnaire .....	50
6.5.2 Factor Analysis .....	50
6.5.3 Descriptions of Company Operation .....	52
FOOTNOTES, CHAPTER SIX .....	53
CHAPTER SEVEN: SUMMARY OF RESULTS	
7.1 The Company .....	55
7.2 The Market .....	57
7.3 The Personnel .....	60
7.4 The Development .....	61
7.4.1 Major Variables for Successful Product Development .....	62
7.4.2 Major Reasons for Product Failure .....	64
7.5 Attitudes to Important Variables for Successful Product Development .....	64
FOOTNOTES, CHAPTER SEVEN .....	71

	<u>Page</u>
CHAPTER EIGHT: CONCLUSIONS AND RECOMMENDATIONS	
8.1 Practices of Product Development .....	72
8.2 Attitudes to Product Development .....	74
8.3 Recommendations .....	77
APPENDICES	
A. Questionnaire .....	80
B. Tables of Questionnaire Results .....	90
C. Description of Company Operations .....	118
BIBLIOGRAPHY	144

### LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
1	Classification of New Products	10
2	Company Planning	15

### LIST OF TABLES

<u>Table</u>		
1	Responding Companies in Food Industry Sectors	55
2	Production Processes Represented	57
3	Size of Exporting Company	59
4	Product Policy of Exporting Company	59
5	Evaluation of Product Mix by Exporting Company	60
6	Product Management Responsibility	60
7	Age of Respondent by Title of Responsibility	61
8	Major Variables for Successful Product Development	62
9	Highest Summary Variables Considered to be Important to Successful Product Development	63
10	Lowest Summary Variables Considered to be Important to Successful Product Development	63
11	Reasons for Product Failure	64
12	Initial Factor Loadings Matrix: Principal Component Solution	66
13	Major Factors: Varimax Rotated Principal Factors	67
14	Major Factors Defined	69



## INTRODUCTION

Since World War II countries in the western world have experienced a rapid increase in the number of food products available. Some of these food products appeared as a result of new technologies generated by the war, notably in hygiene and processing; others were the result of manufacturer's research and development for the purpose of securing a larger share of expanding consumer markets. New Zealand witnessed these trends but a particular momentum for change arrived during the 1970's.

New Zealand had traditionally been a producer and exporter of basic food materials - principally sheep meats, beef and dairy products. These exports made up 70 per cent of total sales of the New Zealand food industry and in 1978 accounted for 46 per cent of the country's income from exports.<sup>1</sup>

New Zealand food companies experienced radical changes in the 1970's in relation to their traditional markets. These changes created serious challenges as well as opportunities in both domestic and export markets. Success in meeting the challenges and exploiting the opportunities depends to a large extent on developing new markets and new product development skills.

For nearly 100 years New Zealand exported primary food products to the United Kingdom according to the needs of that market. When the U.K. joined the European Economic Community in 1973 the New Zealand economy began to feel pressures to set new patterns in trade for new export markets. On the other hand, rapidly rising incomes in Asia, the Middle East and South America opened up attractive new prospects for New Zealand's food exporters. However, many of these new export markets wanted different products from the traditional meat carcass or dairy products. This required further processing of the raw materials and presented a marketing challenge to the New Zealand food industry.

Although the domestic market in New Zealand was relatively small, many firms were encouraged, during the 1970's, to innovate in order to supply New Zealand consumers who had more discretionary income and who demanded more choice in their purchases. New products became important

to companies as a form of competition. When product prices rose because of uncontrollable factors a competitive edge could be gained in the market with the introduction of a new product. Because consumer products in the food industry tended to enjoy a shorter time period as market leader, innovation became important for steady levels of company profit.

Also during these years, inflation made costs of production and distribution of food rise several times over but the retail price of food did not rise in proportion to give the expected investment return. It became evident to food manufacturers and processors in New Zealand that they could receive a higher price for foods in countries other than New Zealand or their traditional overseas markets.

This combination of external and internal developments, presenting both challenge and opportunity, meant that companies needed not only to develop new markets for their products but also to diversify their products in order to grow. The New Zealand business climate had become more complex, rapidly developing from a producer-oriented, seller's market situation to the adoption of a marketing for export orientation with greater emphasis on product diversification. It had become very important for firms in the food industry to initiate product development and to be successful at it.

The success of new domestic and export ventures in the food industry depends in great part on a food company's abilities and skills in product development during a time of rapid change. Although some data is available on product development in a few, isolated and individual cases in the New Zealand food industry, very little is known about the product development function in most New Zealand food companies or within the food industry as a whole.

The purpose of this research into product development in the food industry was to identify, both overseas and in New Zealand, current methods of product development and to examine possible variables attributable to success. Through identifying the planning, management and skills that are needed for product development, and by understanding the systems that currently exist in New Zealand firms, it was hoped to identify areas where improvements in product development skills could be made.

An important objective of the research was to review the current literature on various aspects of product development related to companies overseas. To gain an overall view, this information was supplemented by interviews with individuals and companies engaged in product development in the United States, as well as private consultancy firms and government departments in Canada. In England, information was gathered through research and interviews with specialized management and business schools, industry and private consultancy firms.

Acting on this information base, it was possible to identify the variables attributed to success in product development. A number of these variables were then examined in the New Zealand setting. The study of practices in New Zealand was conducted initially through a detailed questionnaire sent to a randomly selected sample of New Zealand companies in the food industry. This was followed by a personal interview with the company executive responsible for the product marketing function in each of the sample companies. The data were collated, organised statistically and analysed with the aid of a computer. The results were subjected to the multivariate data analysis technique of factor analysis.

The research was designed to make it possible to analyse the present organisation, system, role and management of product development within the New Zealand food industry. Information was also gathered on the personnel involved in food product development in this country, including their attitudes toward this important business function.

The objectives of the research were to identify the variables involved in product development and, within the confines of the sample size, to evaluate current practices in the food industry in New Zealand. It was intended that the findings of this research would serve as a pilot study for further, indepth work into product development in New Zealand.



## FOOTNOTE

INTRODUCTION

1. Department of Statistics, Monthly Abstract of Statistics,  
Wellington, (July 1979), p. 33.

PART ONE

THEORY AND PRACTICE OF PRODUCT DEVELOPMENT

## CHAPTER ONE

### PLANNING AND PRODUCT DEVELOPMENT

This part of the thesis, Theory and Practice of Product Development, is a review of current literature in the area of product development. Most of the advances in this area, and the resulting publications, are based on industries in the United States and England. Although the principles of product development as presented in this literature are sound and of use in whichever country they are applied, it is important to examine the practical aspects of product development as they apply specifically to New Zealand. The food industry was selected for study because of its historic role of earnings in both domestic and export markets as well as for the variation of manufacturing processes which exist within the industry.

Chapter One (Planning and Product Development) sets out the principles of company planning and how this is related to product planning. It discusses the controversy in the literature between policy and strategy and suggests possible product policies and strategies. The section ends with a flow diagram for planning related to the product and its development.

#### 1.1 Planning

The development of new products, whether for business or consumer use, is an integral part of the industrial and commercial process. The developmental process for new products, from idea generation to test marketing, often takes a great deal of company resources, especially finance, personnel and time. The most important facet of the process is planning.

Planning in general means an orderly arrangement of events over a period of time and although it is a well-known and logical method of



making the best use of resources it is often difficult to accomplish in practice. Planning within a company is no exception. The business environment is full of pressures, sometimes contradictory, and the demands on a manager's time are usually immediate. Planning is a task that is often set aside to be done in a 'quiet' moment and in some cases takes place in the private thoughts of the chief executive without ever being communicated formally to other managers.

There are several levels of planning that can occur within a company, depending primarily on its size. Examples of complex systems can be found in texts on corporate planning but, for present purposes, the aspects of importance in company plans are threefold - objectives, policies and strategies. Planning in these areas usually occurs on three management levels within the company. These three levels are the company level, the departmental level and the product level.

#### 1.1.1 Company Planning

Regardless of the size of a company, growth and/or profit are generally the most important reasons for its existence and it is standard practice for management to set objectives which reflect these priorities. Such a fundamental objective is related to everything the firm undertakes and therefore is related to every stage of product development and marketing. It is the basis of any plan that a company makes.

Although most businesses carry out some form of short-term planning (less than a year), it is generally conceded that many firms do not look further ahead than 12-18 months. Some small firms feel they cannot spare any staff time for planning; others feel they have been successful so far and can manage without planning. The fact of the matter is, however, as pointed out in the literature on the subject, that planning is a continuous process which leads a co-ordinated effort by management toward greater profitability for the company.<sup>1</sup>

At the company level, this co-ordinated effort by management means that company planning endeavours to make the best use of resources to reach specified objectives over a period of time. One of the important sources for management to consider in such planning is the departmental level of the company.

### 1.1.2 Departmental Planning

Departments are really the various functional areas within the company, examples being finance, production, marketing. Planning for each department is guided by the overall objectives that management sets but each department must contribute to the company plan as a whole. The marketing study of Boyd and Massy sets out a clear case for the marketing plan as an anchor point for the company planning process because of its direct link to the external environment (consumers) and because the sales and profits for the company are generated through this link.<sup>2</sup> Certainly it is important that there must be an interaction between all of the functional areas of the business in the planning process.

Departmental planning makes it possible for groups to be autonomous but it also allows departments to contribute to setting the company objectives as a whole. When considered with other department's plans senior management can set objectives for the best use of resources throughout the company. In a small business these levels may be obscured so that one person may need to consider both the specific and the general company situation and plan.

### 1.1.3 Product Planning

At the centre of the growth objective is the existing product or product lines of the company. Products are defined most completely by Kotler as being:

anything that can be offered to a market for attention, acquisition, or consumption; it includes physical objects, services, personalities, places, organisations and ideas.<sup>3</sup>

A company can have either one product, several products which are related in that they serve one need or are sold to the same consumer groups, or several unrelated products, each of which requires direction to a specific market and serves various needs.

The decision of how many products a company should manufacture is part of the company planning function and the extent of the product range offered is known as the product mix and the markets which the products serve determine the company's product policy.<sup>4</sup>

The activity of changing a company's product mix is known to almost every firm within an industry. Certainly there are regular product changes among consumer industries such as the food industry. There are basically two kinds of changes that are possible in a product mix - either innovations or alterations.

An innovative change is one involving a product and technology completely new to both consumer and the company. An alteration involves a change of one or more product characteristics of the existing range, thereby making the product new to either the consumer or the company. There are variations in each of the change categories, for instance freeze-dried coffee was an innovative process involving new technology although the product itself was only altered. The recent package changes made in many cereal products because of the adoption of metric measures in New Zealand gave some companies the opportunity to market their product as if it were 'new' even though the product and technology had not changed. This serves as an example of a product alteration, whereas the introduction of quick frozen foods was an innovation since both the product and the technology were completely 'new'.

New products as referred to in this study will mean products arrived at through either innovation or through alteration. In 1957 Johnson and Jones<sup>5</sup> provided a standard classification of new product possibilities in terms of both technology and/or market. This work is referred to in writings as recent as 1978.<sup>6</sup>

Figure 1: Classification of New Products

		Increasing Technological Newness		
Increasing Market Newness	Product objectives	No technological change	Improved technology	New technology
	no market change		<u>Reformulation</u> Change in formula or physical product to optimise costs and quality	<u>Replacement</u> Replace existing product with new one based on improved technology
	strengthened market	<u>Remerchandising</u> Increase sales to existing customers	<u>Improved product</u> Improve product's utility to customers	<u>Product life extension</u> Add new similar products to line to serve more customers based on new technology
	new market	<u>New use</u> Add new segments that can use present products	<u>Market extension</u> Add new segments modifying present products	<u>Diversification</u> Add new markets with new products developed from new technology

Source: Samuel C. Johnson and Conrad Jones, "How to Organise for New Products", Harvard Business Review, May-June, 1957.

Product development then is the process used by a company to bring a new product to the marketplace and can involve changes both in technology and/or the market. Some authors refer to the process as evolution<sup>7</sup> or liken it to human development.<sup>8</sup> Certainly there is not one set of rules to which a company must conform when setting a policy to change their products but there is an established set of procedures referred to by the majority of authors as a guideline in the formulation of product development policy and strategy.

## 1.2 Product Policy/Strategy

There is confusion in the business literature concerning policy and strategy in relation to company planning for new products. Some authors interchange the use of these words. Fitzroy<sup>9</sup> for example, in a chapter entitled 'Product Policy' discusses product strategy throughout. These strategies take the form of where the firm expects to be in any one market in relation to its competition.

Other authors seem to feel words like policy are easily understood and require no particular explanation. In fact, Hisrich and Peters<sup>10</sup> do not use the term policy but speak of marketing mix strategies which include wide ranging activities such as enlarging the sales force or organising a new technology development.

Desrosier<sup>11</sup> says that "policy objectives are different for different organisations but they are all common sense when one considers that the policies are used by the same level members of an organisation and all deal with making an organisation functional; therefore policy objectives are common sense."

Kotler<sup>12</sup> discusses product policies as factors which determine the company's position in the marketplace and strategies as being ways that the company can implement the policies. For example, the decision of the number of products in the product mix is a policy decision but deciding to be a specialist, with these products offered to one market, is a strategy decision.

Baker<sup>13,14</sup> on the other hand specifies that a firm must first identify the nature of its business, set objectives it wishes to achieve, formulate strategy as to how to reach objectives and then lay down policy to implement the strategy.

The confusion in the literature on the differences between policy and strategy is basically one of definition rather than function. It is important for the manager who is creating a plan for his company to understand the functional differences.

Objectives are the reasons for the existence of the firm, usually a growth or profit objective achieved through the production of one or more products. The way in which this objective is met is guided by particular policies laid down by the company. These include such things as whether the company will provide quality products, will be dedicated to a research programme, etc. These policies are then implemented by strategies such as how to compete in the marketplace with the given products and for specified results. In some firms, there will be little difference between market and product strategies.

The following are product policy alternatives for the company:

- to maintain the product mix without change;
- to change an existing product or product line slightly, for example to alter packaging;
- to change an existing product or product line in a major way, such as a new formulation or a new market entrance;
- to extend a product line by adding a complementary product;
- to add a product to the mix that is new to the firm but a copy of one already on the market;
- to add a product to the mix that is a completely new innovation for the firm as well as for the consumer;
- to add a group of products requiring a new technology for the firm.

Ideally, the selection of a product strategy should be based on a market opportunity which will utilise the resources of the firm in the most profitable way. There are many product strategies available to a company involving a number of different parameters - product mix, market position, degree of specialisation, level of competition, timing or price, to name a few. Some of the standard strategies are summarized here.

#### Product Mix Strategy<sup>15</sup>

Options on strategy with respect to width, depth and consistency of the product mix are:

- full line, all market strategy - offering a full choice of products to all market segments for the industry
- market specialist - offering a full line of products to one particular market segment
- product line specialist - specialising in products of a single type sold to all markets
- limited product line specialist - offering a particular design of a single type of product usually for one market segment, as in small businesses
- specific product specialist - choosing a particular product and marketing it for the opportunity available
- special situation specialist - meeting a special situation need with the company's own capabilities for a market that is often protected from major competitors.



### Product Competition Strategy<sup>16</sup>

Product strategies related to military strategy are:-

- attack head on - meet the competition in a frontal assault such as in a price competition
- flank attack - concentrating the mass of one's effort against a competitor's weakness such as promoting product differences, strong product development
- a state of coexistence - agreement to compete actively so long as the territory or market share is not threatened.

### Product Introduction Strategy<sup>17</sup>

Three alternatives for introduction to the market are:-

- product breakthrough - product offers some radical advantage over competition
- competitive product - shows no clear advantage but shows cost and performance benefits
- improved product - lies somewhere between these two; while not radically different, it can be shown to be superior.

### Product Innovation Strategy<sup>18</sup>

Strategies for new product development are:-

- first to market - based on strong research and development, involves high risk taking
- follow the leader - based on strong development resources and the ability to act quickly
- applications engineering - change of products to fit needs of particular set of customers
- me-too - based on strong manufacturing efficiency and cost control.

### Product Pricing Strategy<sup>19</sup>

Three main techniques for product pricing are:-

- cost-plus pricing - cost of materials, labour + allocation of fixed costs + allocation for profit = product price, represents the largest, middle sector of the market
- penetration pricing - moving into markets at very low prices in order to buy market share and large volume of

turnover

- skimming price - the top price sector of the market is 'skimmed off' - requires a distinctive product advantage over competition.

These strategies are simply ways of competing in the marketplace to secure the desired company objectives. The correct strategy in a given situation depends on the product mix of the company in relation to those of the competition. New product development, either as an innovation or an alternative, can be either a strategy itself or can be one aspect of a more complex strategy. Together with product policy they form the substance of company planning.

### 1.3 Summary

Planning is a management function involving the best use of resources to achieve specific company, department and product objectives. It is a fundamental company task and gives direction to the activities of the company as a whole.

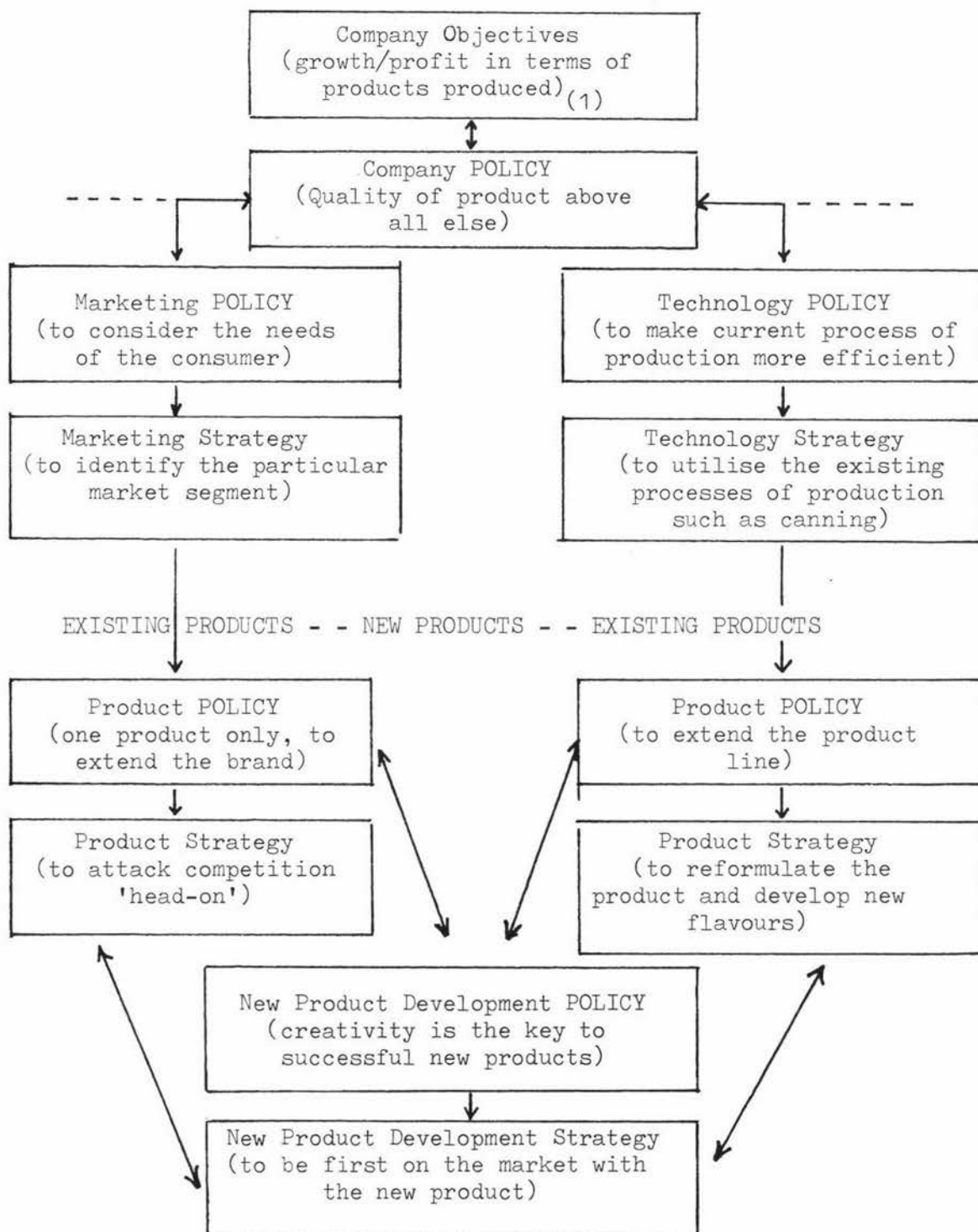
For product development, planning must include the major objectives and must be set before any development work is done. Planning identifies the product mix and the markets that the mix will serve. Planning also provides guidelines for making changes in the product mix and it is in this regard that specific policies and strategies are set to direct the development of new products and the alteration of existing products.

There is a wide range of possible planning techniques for products. It is important that companies in the New Zealand food industry are made aware of these, particularly as companies enter new markets and increase product development. Some of these markets will be overseas and it is important to understand the market competition, to develop a strategy for the products and a viable product development system.

Planning as it has been discussed here can be diagrammatically reproduced as follows (Figure 2).

Figure 2: Company Planning

(1) represents an example for each of the planning titles



FOOTNOTES

CHAPTER ONE: Planning for Product Development

1. Brion, J.M., Corporate Marketing Planning, J. Wiley & Sons, New York, (1967), p.10.
2. Boyd Jr., H.W. and Massy, W.F., Marketing Management, Harcourt, Brace, Jovanovich Inc., New York, (1972), p. 25.
3. Kotler, P., Marketing Management, 3rd edn., Prentice Hall, London, (1976), p. 183.
4. Baker, M.J., Marketing, 2nd edn., MacMillan, London (1974), p. 141.
5. Johnson, S. and Jones, C., "How to Organise for New Products", Harvard Business Review, (May-June 1957), p. 52.
6. Hisrich, R.D. and Peters, M.P., Marketing a New Product: Its Planning, Development and Control, Benjamin/Cummings Publishing Company, California, (1978), p. 10.
7. Booz.Allen & Hamilton Inc., Management of New Products, New York, (1964), p. 7.
8. Baker, Marketing, p. 143.
9. Fitzroy, P.T., Analytical Methods for Marketing Management, McGraw-Hill, New York, (1976), p. 251.
10. Hisrich, pp. 3-10.
11. Desrosier, N.W. and Desrosier, J.N., Economics of New Food Product Development, The AVI Publishing Company Inc., Connecticut, (1971), p. 4.
12. Kotler, P., Marketing Management, 2nd edn., Prentice-Hall, London, (1972), p. 423.
13. Baker, M.J. and McTavish, R., Product Policy and Management, Macmillan Press Ltd., London, (1976), p. 28.
14. Baker, Marketing, p. 142.
15. Kotler, 3rd edn., p. 186.
16. Baker, M.J., Marketing New Industrial Products, MacMillan, London, (1975), p. 154.
17. Ansoff, H.I., Corporate Strategy, McGraw-Hill Book Company, New York, (1965), pp. 190-193.
18. Ansoff, H.I. and Stewart, J.M., "Strategies for a technology based business", Harvard Business Review, (November-December 1967) p. 81.
19. Winkler, J., Winkler on Marketing Planning, Cassell/Assoc. Business Programs Ltd., London, (1972), p. 173.

## CHAPTER TWO

### SYSTEMS OF PRODUCT DEVELOPMENT

When the company has worked its way through the planning process - setting objectives, policies and strategies on company, departmental and product levels - it is ready to begin the system of development of the new product. It is assumed in what follows that the policies do not direct the firm towards a status-quo situation but instead set plans for product development.

#### 2.1 The Process of Development

The process of development is well documented in the literature. It is generally thought of as occurring in a number of clearly defined stages. The stages may alter slightly according to the kind of industry or by company preference but basically they are a guide for all product development. Pessimer<sup>1</sup> offers a view of the development process, the terminology of which is particularly useful for the development of industrial products. Of better application to the food industry, however, is the development system described in 1964 by Booz.Allen and Hamilton which consists of six stages as follows:-

Exploration - the search for product ideas to meet company objectives.

Screening - a quick analysis to determine which ideas are pertinent and merit more detailed study.

Business Analysis - the expansion of the idea, through creative analysis, into concrete business recommendation including product features and a programme for the product.

Development - turning the idea-on-paper into a product-in-hand, demonstrable and producible.

Testing - the commercial experiments necessary to verify earlier business judgements.

Commercialisation - launching the product in full-scale production and sale, and committing the company's reputation and resources.

There have been many books and journal articles written over the past fifteen years dealing individually with each of these six stages of product development. It is not the purpose of this study to explain these steps in more detail but there are relevant areas that should be noted.

## 2.2 Risk

The first observation stems from the fact that product development involves a high degree of risk on the part of the company. The simple fact is that most new products fail. The risk of failure is measured not only in terms of dollars spent, or in terms of time spent in the development of a product, but also in terms of failure of the product to meet the objectives of the company and to make a profit in the time span as planned. One report shows that 5 out of 10 new products never reach launch stage;<sup>3</sup> another indicates that 92 out of 100 new products fail to survive for more than a year on the market.<sup>4,5</sup>

The failure rate is especially high in the food industry where companies compete for the limited shelf space of retailers. If a product does not give an acceptable return per foot of shelf space (one measure of sufficient consumer demand) the space is reduced, accelerating product failure.

Risk is a fact-of-life in product development but it should not be a deterrent from engaging in the development process. The effects of risk can be lessened by careful evaluation techniques at various stages of the development process and new techniques such as Bayesian analysis are helpful in reducing the risk of failure.<sup>6</sup>

## 2.3 Market Research

One effect of the high failure rate for new product development, and the considerable costs involved, has been to make greater use of market research. Knowing and understanding the consumer is the basis of all marketing and it is extremely important to collect such information in relation to each phase in the development of a new



product. Concept testing, market testing, package and product name testing are only a few of the areas where market research helps to provide information for decisions at analysis stages in the development process.

The major importance of market research in the development process is for the company to become aware of the consumer and to gather knowledge of his characteristics and needs for use in product strategy formulation.

#### 2.4 Marketing/Technology Interface

Of increasing importance to the successful development process is the co-operation of marketing and laboratory or technical personnel. This is documented by such authors as Baker,<sup>7</sup> Desrosier<sup>8</sup> and Hisrich.<sup>9</sup> These writers stress that there should be close and effective communication between the market and product research areas and also that management should take responsibility to ensure that the interaction takes place in all phases of the development process. In a 1967 article by Ansoff and Stewart<sup>10</sup> the amount of information flow from research and development sections to marketing was related to the type of business concerned. 'Greater interaction was found in businesses using a high degree of technical expertise. This communication is of special importance to product development in the food industry where technical laboratory work must combine with market research on consumer reactions to the product in order to ensure success.

#### 2.5 Cost

Of importance to all companies is the monetary cost of product development. The loss by the E.I. DuPont de Nemours Company of \$250 million on the development and subsequent market failure of Corfam<sup>11</sup> represents an upper extreme but underlines the fact that as the development of new products are used more and more by companies to gain a competitive edge over others in the market, the risk of heavy losses becomes greater.

Some suggestions are made in the recent literature for ways of cutting some of these losses. Basically this involves creating a staff position within the industry (in this case referring to the food industry)<sup>12</sup> which would locate fully developed products that

are not viable for one company but could be used by another, probably smaller company, to the advantage of both company and industry. Alternatively, a small company could produce under contract to another larger firm and therefore the costs are not so great. It has recently been said in New Zealand that big companies often buy up smaller ones to get the already developed expertise, or product, thereby saving costs.<sup>13</sup>

Other possibilities for easing the development costs are those relating to government assistance to industry in the form of grants or tax relief. Such systems are in operation in New Zealand in relation to export products.<sup>14</sup>

## 2.6 Knowledge

All of these items in the system of product development refer to action that a company can take when developing and marketing a new product. A separate category in the development system that is relevant to all stages in the process is the level of knowledge in the company needed for development. Such knowledge is not a quantifiable substance but it is highly relevant to successful product development. Midgley<sup>15</sup> makes note of the relevance of knowledge to the development process when he relates the development of new products to the construction of a scientific theory. The starting point in both is existing knowledge from which a problem is defined. Hypotheses (new product ideas) are then postulated as ways of solving the problem. After testing by observation, measurement and experiment (in which knowledge plays an important part) a viable solution is found (the new product).

Some authors refer more indirectly to the importance of existing knowledge in the process of new product development. Pessimier<sup>16</sup> for example discusses at some length the importance of a firm's acquiring artistic, technical and scientific competence (knowledge) which then aids the company in search activities for new products. He points out that in most cases a firm can identify its special area of skill or knowledge. This indicates one of the important reasons why co-operation between marketing and technical personnel is so very important in product development. Also of relevance is the research finding by Kraushar<sup>17</sup> that older and more senior members of the firm

make better product development managers, their experience (knowledge) being one of the important factors.

Knowledge directly applicable to product development comes from various sources within a company - academic training; experience within the company or with similar product lines; in-house training; reading company documents (texts, journals, newspapers); discussions and seminars with colleagues or through associations; from a consultant; as well as discussions with consumers, retailers and distributors.

## 2.7 Summary

The system most commonly used for product development involves active and passive parts. The active processes include exploration for ideas, a screening of ideas, analysis of the product potential, development of the product, consumer testing, launch and sale.

The passive processes include knowledge of design, technology and marketing. The level of knowledge in a company is of central importance to success in product development. Although sufficient knowledge and skills can be brought together within large companies, this is not always the case in smaller ones. In some cases it is more practical to go outside the company for specific tasks such as analysis of product ideas and consumer testing.

Current practice indicates that great importance should be attached to co-operation between the marketing and technical/laboratory operations. Companies entering into product development must also be aware of the cost involved and the risk of failure. Awareness and regular evaluation throughout the process can help to reduce the risk of failure.

The role of knowledge and expertise, plus the importance of co-operation within the firm, together suggest the central role played by management in new product development.

## FOOTNOTES

CHAPTER TWO: Systems of Product Development

1. Pessimer, E.A., New-Product Decisions, McGraw-Hill Book Co., New York, (1966), p. 11.
2. Booz.Allen & Hamilton, p. 8.
3. Pessimer, p. 5.
4. Kotler, 3rd edn., p. 199.
5. Robertson, T.S., Innovative Behaviour & Communication, Holt, Rhinehart & Winston Inc. New York, (1971) p. 17.
6. Kotler, 3rd ed., p. 346.
7. Baker and McTavish, p. 135.
8. Desrosier, p. 202.
9. Hisrich, p. 44.
10. Ansoff and Stewart, p. 75.
11. Robertson, p. 1.
12. Desrosier, p. 203.
13. McCrae, B., "New Technology for the 1980's", N.Z. Export Journal, (December, 1979), p. 4.
14. O'Brien, P.V., "Scheme places exports on seven band schedule", National Business Review, (July 4, 1979), 12.
15. Midgley, D.F., Innovation and New Product Marketing, Croom Helm, London, (1977), p. 12.
16. Pessimer, p. 40.
17. Kraushar, P.M., New Products and Diversifications, Business Books Limited, London, (1977), p. 50.

### CHAPTER THREE

#### MANAGEMENT OF PRODUCT DEVELOPMENT

##### 3.1 Product Management

The development process for new products is lengthy and involves several kinds of decisions which are increasingly important because of high cost and risk as discussed in section 3.2. The management function for product development is a major responsibility and must be supported by well defined lines of communication within the company, beginning with the support of senior management for new product activities. This section will outline alternatives for company organisation of product management.

##### 3.2 Patterns for Organisation

The use of titles within any organisation is frequently taken very lightly and just as often loosely interpreted in the literature. In most cases it is the job description that really identifies a person's place in the organisation and not his title. It is important to consider the place that the management of products occupies in a firm's organisational structure. It is clear that since the end of World War II there have been a series of changes in the patterns for organisation of product management. In many instances the position and/or titles for responsibility are not clear but concepts of organisation for the decision making process can be identified.

The standard organisational structure usually is one of four types: new-product departments; product manager system; new-product committees; or, task force/venture team.<sup>1,2,3</sup> These structures are not mutually exclusive.

Booz.Allen and Hamilton<sup>4</sup> found that there could be top management control of new products or interdepartmental co-operation which

included new product departments, product teams and committees. Kraushar records a similar set of possibilities noting that research and development departments are often responsible for communicating a technical advance to top management.<sup>5</sup> Kotler<sup>6</sup> adds 'new product managers' as a possible fifth type. White<sup>7</sup> notes that there are seven standard structures for organisation in U.K. companies but his titles include some duplications and can be reduced to the four mentioned above.

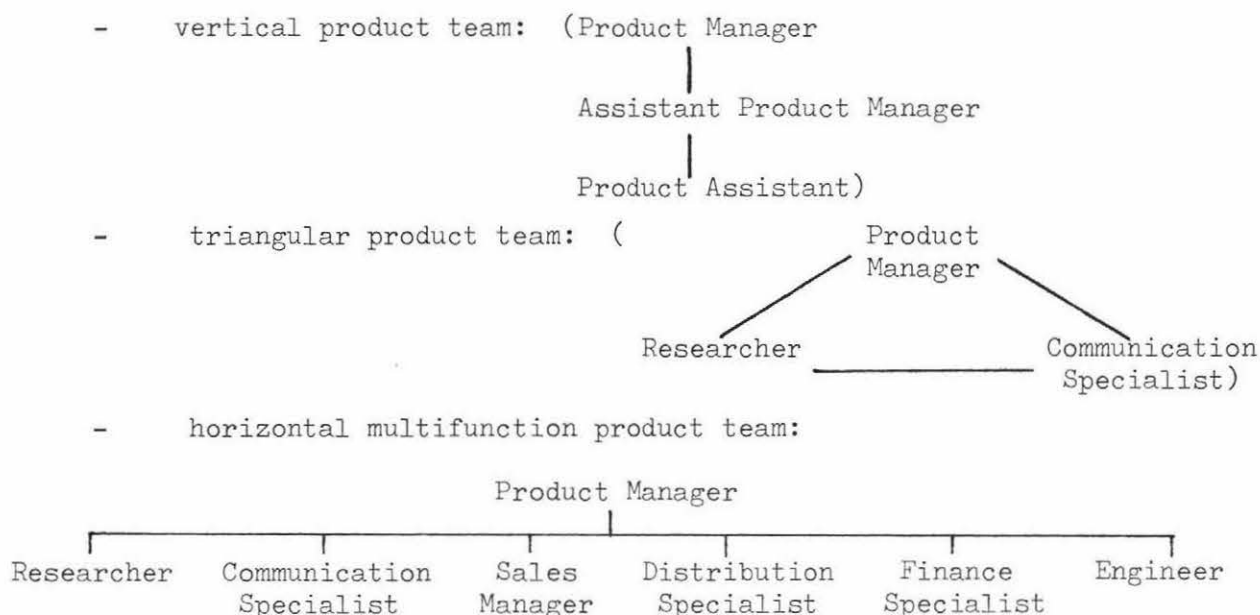
Some authors approach the organisation of product management more simply from the viewpoint of general management principles and note three approaches to the organisation for product marketing. These three are usually the functional approach (specialisation is by type of work done), the product manager approach (joint accountability for a product with the marketing manager), or the general manager approach (division of the company into product divisions where the division general manager is responsible for the product).<sup>8</sup>

Some authors suggest that the choices of product management for a company should be based on sound marketing strategy. The management alternatives might then be product managers for companies with many products to one market, market managers where limited numbers of products are sold to a wide number of markets, or a sales manager for a situation of many products all of one line.<sup>9,10</sup>

An example of product management organisation for a high technology industry is given by Anderson.<sup>11</sup> He lists the product oriented structure (a group of people with a variety of skills take sole charge of the development of a product), the function oriented (personnel resources are grouped and each group in turn handles a particular phase of the development of the product), and the project oriented (a project leader is assigned to develop a product and various personnel are assigned to help; the 'team' exists only for the duration of the one project).

A more recent classification of product management systems given by Kotler<sup>12</sup> is based on the relationship of the personnel involved. He lists four possibilities:-

- single product manager



It is clear that a single, standard system of management organisation for product development does not exist. Some of the approaches currently in use are very much more sophisticated than others. The type of system selected is largely a result of the size of the firm, its product and market objectives, and its resources. A requirement that is important to any system is the involvement of top management in the decision making processes. Kraushar<sup>13</sup> cites the importance of placing an older, senior executive in charge of the product development.

### 3.3 Discussion of Four Popular Alternatives

The systems most often cited can be related to the four standard organisational structures in the previous section. A short explanation of each is relevant to a research study undertaken in New Zealand.

#### 3.3.1 New Product Department

This structure separates new product development, planning and management functions from the rest of the company mainly to eliminate redundancy of tasks and to work full time for new products. Management of the department is usually given over to a person who is capable of responsibility and who reports to senior levels within the firm. The emphasis of the department can be technical or marketing depending on the personnel and the company itself. A marketing emphasis is usually more effective for new products because of the close contact with the consumer. There must be clear lines of communication with other managers and departments in order to carry out all the necessary



tasks in development. If this is not the case, and the department head has no direct authority to see that other managers co-operate, it is rare for a department to be successful.

### 3.3.2 New Product Committee

This is usually a temporary group, formed for a specific purpose related to a phase of the product development. Members of the committee carry out regular duties in other company departments at the same time and the committee can be used when required without taxing other company resources. Usually, at least some top executives are involved and this is an important advantage as decisions are more likely to be readily accepted. This type of organisation is difficult to co-ordinate and because of other executive pressures there may be low attendance or little acceptance of responsibility when tasks need to be completed.

### 3.3.3 The Product Manager

Today in many companies the concept of a product or brand manager is regularly a part of the organisational structure. It is possible to trace the origins of the use of some form of product management to the General Electric Company as early as 1894<sup>15</sup> although the first use of product managers is usually credited to Proctor and Gamble in 1927.<sup>16</sup>

The use of managers for specific products was more widespread in both the U.S.A. and U.K. after World War II. At this time there was a general growth in the production of consumer goods and an emphasis placed on selling by brand. Extensive product lines were developed by single companies and it became more difficult for management to give attention to individual products. The concept of product management met a need for co-ordination and grew along with the expansion of consumer goods.

The manager's primary job was to co-ordinate the planning, development and sale of each individual product. As one author states: "... the definition of the product manager is to be the marketing brain centre for his product".<sup>17</sup> Such managers are specialists in that they know a particular product market thoroughly but they are also generalists in that they are concerned with every facet of development and with every variable that can possibly affect a product or its line. Some

companies evaluate the product manager system in terms of the particular product's profit.

Other companies consider that a product manager is basically a staff position, not a profit position, and emphasis is on providing information, co-ordinating market activities and carrying out product strategies.<sup>18</sup>

Regardless of the emphasis, it is very clear that the success of this system requires that the manager work closely with other managers. This collaboration of effort, or interfacing of the product manager,<sup>19</sup> is often a very sensitive question, mainly because the product manager does not usually have line authority. The literature points out several other possible areas of controversy in the product management role which should be mentioned here. Product managers should:

- have areas of exact and specific responsibility rather than being information centres;<sup>20,21</sup>
- be trained and experienced company people;<sup>22,23</sup>
- attempt a limited number of interfaces;<sup>24</sup>
- have quality specialist support both inside and outside the company (to avoid overloading the organisation and the manager and allowing more priority for product evaluation programmes);<sup>25</sup>
- have interpersonal influence (personality) since this is seen to be an important key to the success of the position;<sup>26,27,28</sup>
- allocate high priority to co-operation between the market and technology areas of product development.<sup>29,30,31</sup>

Some firms have retained the product manager system of organisation with success, Lever Brothers being one notable example.<sup>32,33</sup> Other companies such as Heinz have altered the system somewhat,<sup>34,35,36</sup> and still other companies such as Pepsi Cola have dropped the concept completely.<sup>37,38</sup> Although it is not a universally utilised system of new product management the product manager option does seem to be the most widespread system of product management in use today and allows attention to be given to each product without separating the various line divisions already established in the company.

### 3.3.4 The Venture Team or Task Force

This type of organisation is newer to product development and consists of a group of people chosen from various functional areas of the company. They take the new product all the way through its development and their authority is vested in a chosen member who is 'manager' and reports directly to the top management. The research is generally carried out faster and is seen by all members as part of their job so that there is no opportunity to 'build personal empires'. The team is not permanent but operates under specific time limits. Individual department managers may object to the amount of time spent by some of their staff on the new product and this may cause problems to the effectiveness of this system.

### 3.4 Summary

This section has briefly outlined the four main alternatives currently used as organisation patterns for product development: new product departments, new product committees, the product manager, the venture team. The benefits of group management are specialisation of interests, the use of wide ranging resources and the advantages of co-ordination, whereas the benefits of single person management seem to arise from the responsibility he feels for his product and as a result depends heavily on his personal capabilities.

When choosing the appropriate management structure a company must look to the size of their firm, the type of market(s) for their product(s), the type of product, the company objectives and technical policy, the type and availability of personnel for product work.<sup>39,40</sup>

Hisrich/Peters<sup>41</sup> feel that venture teams may suit large corporations interested in totally new products; new product committees may be used by small firms who cannot afford full time development personnel; the product manager system may suit firms with multiple product lines; the new product department may be well adapted to firms with a single product line and functional company organisation.

Essentially a full time management system for product development means a commitment on the part of the management to a new product programme and this is in no small way important to the success of the company's products in the marketplace. It is, however, only one of several factors present within a company which influence the success of product development.

## FOOTNOTES

CHAPTER THREE: Management of Product Development

1. Sheuing, E.E., New Product Management, Dryden Press, Illinois, (1974), p. 37.
2. Hisrich, p. 29.
3. National Industrial Conference Board, Organisation for New Product Development, Experiences in Marketing Management No. 11, New York, (1966), p. 33.
4. Booz.Allen and Hamilton, p. 20.
5. Kraushar, p. 40.
6. Kotler, 3rd edn., p. 200.
7. White, R., Consumer Product Development, Penguin, London, (1976), p. 27.
8. Evans, G.H., The Product Manager's Job, American Management Association, New York, (1964), p. 12.
9. Baker and McTavish, p. 61.
10. Ames, B.C., "Payoff from Product Management", Harvard Business Review, 41, (Nov-Dec 1963), p. 141.
11. Anderson, N G., From Concept to Production: A Management Approach, Taylor & Francis, London, (1975), p. 161.
12. Kotler, P., "Marketing Strategy in a Rapidly Changing World", Seminar Address, Sales and Marketing Executives International, Auckland, New Zealand, (July, 1979), p. 26;  
referenced by permission of author, letter dated 15th January, 1980.
13. Kraushar, p. 47.
14. Interview with Peter Kraushar, London, May 1979.
15. Baker and McTavish, p. 65.
16. Business Week, "Brand Manager, No Longer King", (June 9, 1973) p. 58.
17. Sheuing, p. 41.
18. Kelly, R.T., "Product Management on Trial", Journal of Marketing, 42, (Oct. 1978), p. 30.
19. Luck, D.J., "Interfaces of a Product Manager", Journal of Marketing, 33, (Oct. 1969), p. 32.
20. Luck, D.J. and Nowak, T., "Product Management - Vision Unfulfilled", Harvard Business Review, 43, (May - June 1965), p. 147.

21. Ames, B.C., "Dilemma of Product/Market Management", Harvard Business Review, 49, (March-April 1971), p. 70.
22. Luck and Nowak, p. 150.
23. Hise and Kelly, p. 32.
24. Luck, p. 36.
25. Kietz, S., "Get More Out of Your Brand Management", Harvard Business Review, 51, (July 1973), p. 130.
26. Gemmill, G.R. and Wilemon, R.L., "The Product Manager as an Influence Agent", Journal of Marketing, 36, (January 1972), p. 26.
27. Bither, S.W., Personality as a Factor in Management Teams Decision Making, Pennsylvania State University, Pennsylvania, (1971), p. 1.
28. Venkatesh, A. and Wilemon, D.L., "Interpersonal Influence in Product Management", Journal of Marketing, 40 (Oct. 1976), p. 73.
29. Ames, B.C., "Effective Management of Research-Market Teams", Research Management, (March, 1979), p. 7.
30. Thomas, M. and Goodwin, J., "An Examination of the Management of the Research and Development-Marketing Interface in Several British Companies", Quarterly Review of Marketing, (October 1976), p. 2.
31. Struse, R.W., "Marketing and Research Techniques Can Lead to Product Failures", Food Product Development, 11, (Nov. 1977), p. 12.
32. Hise and Kelly, p. 32.
33. Interview with R. W. Fidd, R.J. Heinz Co. Ltd., London, England.
34. Hise and Kelly, p. 32.
35. Hise and Kelly, p. 32.
36. Interview with R. W. Fidd, R.J. Heinz Co. Ltd., London, England.
37. Hise and Kelly, p. 32.
38. Business Week, p. 32.
39. Stone, M., Product Planning, MacMillan Press, London, 1971, p. 103.
40. National Industrial Conference Board, 1976, p. 15.
41. Hise and Kelly, p. 32.

## CHAPTER FOUR

### SUCCESSFUL PRODUCT DEVELOPMENT

#### 4.1 Introduction

To this point discussion has been concerned with the importance of planning in product development, the definition of the development function and related areas of mix, policies and strategies. The system of product development is influenced by such variables as cost, risk, communication and knowledge but the company has flexibility in its choice of management systems for product development.

It is assumed that a firm wanting to diversify intends to be successful and although there is not a formula for sure success there are various factors which, if taken into account by the firm, will increase the chances for success.

In some cases the literature lists the mistakes of companies which were unsuccessful in a product development situation and expects readers to take care not to make the same mistakes. Other sources quote empirical evidence giving several factors that have been shown to be important for new product success. It is important to consider both situations.

#### 4.2 New Product Success

One U.K. study by Carter and Williams is cited and used as the basis of extended work by Baker.<sup>1</sup> Twenty four factors were isolated as being present in innovative firms and absent in unprogressive firms. Their stress was on management and organisation. The factors included a readiness to look outside the firm for standards of achievement, effective internal communication and co-ordination, high status of science and technology in the firm, a regular review and survey of

potential ideas, high quality chief executives, and an effective selling policy.

Twiss<sup>2</sup> noted seven additional factors as being the most critically important for success. He emphasised the product and the development process as well as company organisation and personnel and he included company market orientation, relevance to the organisation's corporate objectives, an effective project selection and evaluating system, effective project management and control, a source of creative ideas, an organisation receptive to innovation, and commitment by one or a few individuals to the development of the product.

Among the studies cited by Twiss are those by Langrish et al. and the Project SAPPHO under Freeman.<sup>3</sup> Criteria for success isolated by these studies include the clear identification of a need, availability of resources, help from government sources, high priority allocated to marketing and individuals responsible for the project being more senior in the firm and having authority.

Kraushar<sup>4</sup> emphasised efficiency of planning and good timing for launch. Andrews<sup>5</sup> noted the importance of a strong brand name, distribution control, a distinctive product which can fulfil its promise, and a market environment which is not dominated by sophisticated marketing companies.

Twiss<sup>6</sup> observed that there were many factors which interact to make an innovation successful. Through the research and development department there was a diffusion of scientific and technical knowledge and through the marketing department a diffusion of the knowledge of market trends. These interactions of knowledge are important to all phases of innovative development within a company.

McLoughlin<sup>7</sup> pointed out the necessity of employing creative people and managing them carefully in order to avoid losing them through boredom or company inflexibility. Ansoff and Stewart's<sup>8</sup> conclusions were that although requirements vary for different industries, the success of a product introduction depended on the communication and co-operation between the research and development, manufacturing, and marketing functions of the company. On the other hand, a study by Booz.Allen and Hamilton related success for new products primarily to good management judgement and acceptance of the



principles of new product development.<sup>9</sup>

The most recent report of research into this area, published in 1979, states clearly that the single most important dimension for new product success is product uniqueness.<sup>10</sup>

#### 4.3 New Product Failure

Criteria for success are one means of isolating factors relevant to successful product development. The literature however gave clear evidence of unsuccessful product development as well. A complete picture is possible only by considering both development situations. Of those authors who have studied product failure, the following reasons were most often cited.

Winkler<sup>11</sup> listed several reasons for failures, some of which were because timing was wrong, the product was not practical, customer needs changed, or goals were not clearly defined. Neilsen<sup>12</sup> provided examples of failure where the product/package was wrong, price/value was wrong, trade acceptance was poor, or poor advertising was to blame.

Kraushar<sup>13</sup> indicated situations where there was an inadequate product, a lack of competitive advantage, bad timing, or lack of market stability. Angelus<sup>14</sup> commented on vague or nil consumer differentiation (me-too products) as well as other characteristics noted earlier.

A study of the food industry in the United States showed that 40 per cent of 127 new products failed largely due to misjudgement of market conditions, such as timing of the launch.<sup>15</sup>

The problem presented by the unstated definition of words like "failure" and "success" mean that statistics from studies in this area are sometimes unreliable. The important point to be learned from any discussion about product failures is that the development process presents more problems for management decision-making than are usually found in a company's current operation.<sup>16</sup> This being the case, a company engaged in product development should be aware of strengths and weaknesses found in other company's product development systems and then set up an evaluative or review system for use throughout the development and after product launch. Such a task would likely be too much for one person but a committee could share

expertise and decision-making responsibilities.

#### 4.4 Combination of Success/Fail Variables

Product failures tended to draw more attention from the literature than successes but a great deal can be learned from both instances. The examples of variables cited in the previous sections can be grouped under the following headings relating to the product:

- The Company (its organisation and planning);
- The Market (the type and product position);
- The Personnel (individual characteristics as well as communication);
- The Development (including technology, finance, creativity input, management support, etc.).

These headings were useful in developing a list of variables that could be used in a survey of companies in the New Zealand food industry to provide an indication of what makes product development successful. Variables from fifteen different studies were considered, most of which have been discussed in this section. When a variable relevant to product success or cause for failure was repeated in separate studies, it was selected for consideration in the New Zealand study.

The variables selected in this way and later used in part of the New Zealand research were as follows:

- The Company: size, organisation, emphasis on planning, product management systems, marketing emphasis, development emphasis;
- The Market: type, market share, competition, regular evaluation in terms of the products market status, recognition of the need for the product in the marketplace;
- The Personnel: age and experience of those involved closely with the product, personality influences in management, commitment to the product, degree of marketing and technical knowledge;
- The Development: available finance, support of senior management, technical expertise, emphasis of creativity and innovation, government

assistance, interaction of departments  
related to the development process.

## FOOTNOTES

CHAPTER FOUR: Successful Product Development

1. Baker, Marketing Industrial Products, p. 95.
2. Twiss, B., Managing Technological Innovation, Longman Group Ltd., London, (1974), p. 6.
3. Ibid., p. 17.
4. Kraushar, p. 39.
5. Andrews, B., Creative Product Development, Longman Group London, (1975), p. 106.
6. Twiss, p. 18.
7. McLoughlin, W.G., Fundamentals of Research Management, American Management Association Inc., New York, (1970), p. 99.
8. Ansoff and Stewart, p. 74.
9. Booz.Allen and Hamilton, p. 11.
10. Cooper, R.G., "The Dimensions of Industrial New Product Success and Failure", Journal of Marketing, 43, (Summer 1979), 93.
11. Winkler, p. 153.
12. Neilsen Researcher, "What are the Odds?" (Jan-Feb, 1968), quoted in J. Winkler, Winkler in Marketing Planning, Cassell/Associated Programs, (1972), p. 153.
13. Kraushar, P., "Graveyard for New Products", Marketing, (November, 1969), quoted in J. Winkler, Winkler on Marketing Planning, Cassell/Associated Publishers Programs, London, (1972), p. 153.
14. Angelus, T.L., "Why do most new products fail?", Advertising Age, (March 24th, 1969), reprinted in Product Planning, A.E. Spitz, editor, Petrocelli/Charter, New York (1977), p. 279.
15. Buzzell, R.D. and Nourse, R.E.M., Product Innovation in Food Processing 1954-1964, Harvard University, Boston, (1967), p. 125, 169.
16. Kraushar, New Products and Diversification, p. 27.

PART TWO

THE NEW ZEALAND STUDY

## CHAPTER FIVE

### PRODUCT DEVELOPMENT IN NEW ZEALAND

A senior marketing executive and prominent New Zealand personality, Gordon Dryden, once wrote: "the finest New Zealand tradition is a tradition of innovation".<sup>1</sup> He quoted several examples where New Zealand, far away from industrial centres of the world, had been forced to improvise and as a result became a world leader. Examples cited included items like milking machines, sausage-making equipment and plastic surgery techniques.<sup>2</sup>

Such high praise for success implies an orderly approach to a problem and its solution. There is little evidence to support this idea that New Zealand industries have a particular secret to successful product development involving conscious planning. It is more likely that successful developments stemmed from innovations that just "seemed like a good idea at the time".<sup>3</sup> A systematic analysis of the current New Zealand product development scene should include a consideration of the country's limitations and strengths, generally, and of the available resources in three particular areas: design, technology, and marketing skills.

#### 5.1 New Zealand 'Limitations'

It is interesting to note that many observers in this area mention, either briefly or at length, some practical limitations that face product development because of the New Zealand business environment. These limitations are usually seen to include: isolation from other industrial centres of the world;<sup>4</sup> New Zealand's population of 'only' three million people<sup>5</sup> (from the point of view of market segmentation<sup>6,7,8</sup> as well as the inability to support design and technical personnel<sup>9</sup>); restrictive legislation involving import and licensing regulations;<sup>10,11</sup> and relatively low per capita discretionary income.<sup>12</sup>

Such so called 'limitations' of course can become advantages to industrial development and this point was clearly made by R. Dennis in an address to technologists in 1977.<sup>13</sup> Dennis set against the limitations a number of New Zealand's major indigenous resources including the climate, which enabled efficient growth, long coastline strategically set away from large population centres and providing enormous fishing resources, plus the essential primary resources of ironsand, coal and gas.

However one assesses the balance sheet of New Zealand's natural limitations and strengths, the potential for successful product development is ultimately dependent upon how these resources are utilized. This in turn closely relates to the personnel, and to the passive skills identified as knowledge of product design, technology and marketing.

## 5.2 Design for New Products in New Zealand

The New Zealand food industry has faced some problems concerning design in new product development. These problems involve both attitudes toward the design function and the personnel available to do the job.

Design in the New Zealand food industry was not often considered to involve more than a package or label design. It appears that the practice of copying products which have been proven in other markets or processing products under licence were both common in this industry. The New Zealand Industrial Design Council stated that manufacturers were not really interested in product design. Manufacturers tended to "copy overseas product designs out of trade magazines or from trade principals"<sup>14</sup> and sell the products in New Zealand and sometimes overseas.

In part, the practice is understandable. Manufacturers in New Zealand are often fairly small firms and this type of product development policy is often financially sound. Even so, as Dr. M.C. Probine and others believe, there should be at least one highly creative technical person in the organisation for product development success.<sup>15</sup> How available is the talent for new product design and what are their prospects?

The literature indicated that industrial designers in New Zealand number less than fifty graduates a year and are mostly employed overseas.<sup>16</sup>



New Zealand industrial designers not only face few employment prospects in this country, but if they do find a job there is often very limited finance available to sustain design and development programmes. Designers also often experience problems of communication with other employees and management.<sup>17,18</sup>

Despite these difficulties there have been recorded design successes in some industries, notably plastics,<sup>19</sup> and the availability of personnel is not entirely bleak. Product development and design specifically for the food industry has been part of the food technology course at Massey University for over ten years and there have been more than one hundred graduates from the programme. Of these a high proportion are still in the country.

The general outlook is for more success if product development is seen and understood as a team effort involving co-operation between design, technology and marketing personnel.<sup>20,21</sup>

### 5.3 Technology for New Products in New Zealand

For many years New Zealand has enjoyed notable success through high technology innovation over a narrow range of industrial activity while continuing to import technology over a much wider spectrum. The food industry presents many examples of New Zealand produced technology. The process for continuous cheese-making, mechanical dough development, continuous fermentation in beer making, and electrical stimulation for the tenderisation of meat have all come from high technology areas in the New Zealand food processing industry.

Of particular note among the early, high-technology innovative groups was the dairy industry. The New Zealand Dairy Board is the world's largest international dairy products trading organisation<sup>22</sup> and technology plays an important part in its operations. The Dairy Research Institute is the Board's centre for developmental work. Its notable success might suggest to some people a link between large company size and high level of technology innovation but that is not the case.

Research indicates that there is no correlation between technological productivity and company size.<sup>23</sup> This is an important observation, because of the large number of relatively small firms in New Zealand. According to one author, it is the small firm that has an advantage

in pursuing a technology-oriented strategy because such firms are usually often dedicated to innovation.<sup>24</sup> New product development is frequently the reason they came into existence.

It is also clear, however, that small firms seldom exploit their new technology in the market place,<sup>25</sup> and sometimes find it is more difficult to gain acceptance of the technology in the domestic market than it is to succeed in overseas markets. In 1979, for instance, nine small New Zealand companies took part in the Singapore (Trade) Fair with the support of the Development Finance Corporation. Some of the high technology exhibits led to the gaining of several overseas contracts even though the companies involved had not been able to sell their product in New Zealand.<sup>26</sup>

Since there seems to be little doubt in the literature that technology is necessary for innovation and product development,<sup>27,28</sup> the major point for New Zealand food manufacturers seems to have been whether technology is brought (purchased) from overseas or whether it is encouraged and assisted from within New Zealand. Acceptance of new technology in the local market is also important if New Zealand industry is to gain a measure of independence from overseas sources.<sup>29</sup>

There has been some encouragement over the last ten years for New Zealand firms to apply local technology in their processes. For example, financial assistance has been made available through the Development Finance Corporation; some industries have set up their own technological research centres (such as the Meat Research Institute and Forestry Research Institute); in other instances, firms have benefited by using technology from Government groups such as the Department of Scientific and Industrial Research and the universities.<sup>30</sup> The food technology degree was introduced at Massey University in 1961 and since then it is believed that industry has become more active in making specific use of tertiary trained technologists for product development.<sup>31</sup>

In 1977 Dr. M. Probine urged New Zealand firms to acquire more and more knowledge instead of more capital and manpower.<sup>32</sup> It seems that regardless of the size of the company, technology should have a stronger place in new product development for New Zealand than it has had in the past although there are some indications that this is

already taking place. What needs to be borne in mind is the way in which this technology is integrated with marketing for product development.

#### 5.4 Marketing for New Products in New Zealand

Business success in New Zealand is no different from business success elsewhere in that profits are made from the sale of products. What has made New Zealand different from some other countries (in the marketing sense) is that for many years good profits were made from the export sale of primary agricultural products generated relatively easily under highly favourable conditions and sold on stable markets. New Zealand enjoyed the unusual distinction, for an agriculturally based country, of a relatively high standard of living. Very little diversification of the product was needed and very little knowledge of the consumers or of other markets was acquired in the years prior to World War Two.

During the 1950's, and partly due to technologies developed during the war years,<sup>33</sup> several innovations were made. The New Zealand food manufacturing industry witnessed significant growth, notably in relation to the canning, freezing and drying of fruit and vegetables. As important as these developments were for the domestic market, they had little influence on food processing for New Zealand's traditional overseas markets. New product development for the export market was not a distinguishing feature of the New Zealand food industry. It was not until the 1970's that a combination of circumstances occurred that shifted marketing and product development from the sidelines of the industry to a position of potential importance.

Marketing developments in New Zealand took on added significance for industry when the standard of living rose dramatically during 1972 and 1973. The consumer had more discretionary income and there was an increase in the demand for diversified products. To keep up with this demand, and to cut down on the development time usually required to market a genuinely new product, many companies copied successful products from overseas. To some extent, this strategy was necessary because many New Zealand companies had limited resources for development.<sup>34</sup>

The overall influence of the internal market upon marketing practices and product development in New Zealand companies rapidly

met difficulties in the growing market. The boom of the early 1970's was followed by severe shortages in raw material supplies and this dampened new product development in some industries.<sup>35</sup> The effects of inflation, generated by the Vietnam war and rising oil prices, were even more significant. Internal consumer demand decreased, raw material costs rose and retail prices for foods did not keep pace with inflation. As far as the internal market was concerned, the climate was very unfavourable for the marketing of new products. It was in relation to the export markets that the stimulus came for new marketing strategies.

It is now history that marketing generally "arrived" in New Zealand by the 1970's, coincidental with the entry of the U.K. into the European Economic Community. If this represented a challenge to existing markets, however, it is also evident that new opportunities existed for unexplored markets in parts of Asia, the Middle East and South America - areas where incomes were rising.

The importance of these problems and possibilities was marked in New Zealand by such events as the introduction of marketing courses at universities, short courses in marketing for executives, growth in the number of market research firms,<sup>36</sup> and increased government support for new market orientations. Companies responded with a drive to find new markets for their existing products, began to consider product development geared to overseas markets and placed added emphasis on processing primary products to a greater extent within New Zealand.

### 5.5 Summary

New Zealand has in many areas developed technologies to suit a particular New Zealand situation, which have since been proved to be of use worldwide. Generally, however, there has not been any particular systematic development of products or of technologies even though one of the earliest courses in product development was started in New Zealand. Rather, haphazard growth has come from the factory floor or from the quality control laboratories, the latter being especially true in the food industry.<sup>37</sup>

During the 1970's marketing for products began to take on new importance as companies sought new markets to take their products. These markets for many companies were overseas and coupled with the

encouragement of the New Zealand government, exporting of products (both old and new) became a concern to both primary and secondary industries in this country. Many companies in the food industry developed products especially for the New Zealand consumer during this time. However there was a trend among many of these companies to develop and test products in New Zealand with the intention to making greatest sales in another overseas market.

Despite this added awareness it is felt that, even in the 1970's, many companies in the food industry regarded product development as simply laboratory work. Product development was not seen as a process involving the functional areas of design, technology and marketing as one system.

When the New Zealand government designated 1978 as 'Export Year', one of the effects was to place added emphasis on the knowledge of the variables that go into the preparation for export, i.e. etiquette of making overseas contacts, finding agents, researching of the market. The export product is often a domestic production overrun and may not be suitable for the needs of the export market.<sup>38</sup> If the emphasis on exporting continues, as it appears it must, more consideration needs to be given to the development of processed food products by New Zealand firms for specific markets. This is imperative in the food industry and was a major finding of a research group which studied the markets for processed foods in North America and the E.E.C. during 1979.<sup>39</sup>

It is important to study the New Zealand food industry, to understand the product development skills that now exist and the processes of development currently used. By identifying strength and weaknesses in this area, it will be possible to give developmental assistance to companies with either domestic or export market emphasis.

## FOOTNOTES

CHAPTER FIVE: Product Development in New Zealand

1. Dryden, G., "Innovation - A Tradition We Must Revive", in Marketing in New Zealand, J.O. Rimmer, editor, Hicks, Smith & Sons, Ltd., Wellington, (1972), p. 11.
2. Ibid..
3. Converse, P.D., Huegy, H.W., & Mitchell, R.V., Elements of Marketing, Englewood Cliffs, N.J., (1965), p. 503.
4. Dryden, op.cit..
5. Marsland, P., "New Product Considerations", in Marketing in New Zealand, J.O. Rimmer, editor, Hicks, Smith & Sons Ltd., Wellington, (1972), p. 82.
6. Grant, I., "Five New Zealanders Talk About New Product Development", N.B.R. Marketplace, No. 1, (1974), p. 9.
7. McGillivray, L.J., "Market Segmentation in New Zealand", in Marketing in New Zealand, J.O. Rimmer, editor, Hicks Smith & Sons Ltd., Wellington, (1972), p. 37.
8. Thomson, I., Phipps, P., Kelly, I., and Benson, R., "Local Research Problems and Practices", in Marketing in New Zealand, J.O. Rimmer, editor, Hicks Smith & Sons Ltd., Wellington, (1972), p. 64.
9. Green, J., "Why Jane Perry went back to U.K.", New Zealand Economist, (May 1978), p. 7.
10. Grant, p. 9.
11. Smith, T.B., "Government and Business in New Zealand: Constraints, Participation and Influence", in Business and New Zealand Society, G.H. Hines, editor, Hicks Smith & Sons Limited, Wellington, (1973), p. 17.
12. Poole, W.A., "Income and Expenditure in New Zealand", in Marketing in New Zealand, J.O. Rimmer, editor, Hicks Smith & Sons Ltd., Wellington, (1972), p. 19.
13. Dennis, R.A., "Acceptance of Technology and Technologists by New Zealand Industry", Food Technology in New Zealand, (June 1977), p. 13.
14. Ibid., p. 8.

15. Probine, M.C., "Development of 'in house' R & D in this Country", New Zealand Economist, (March 1977), p. 14.
16. Green, p. 7.
17. Ibid..
18. Topham, A., "Feedback from the Front Line", New Zealand Economist, (March 1979), p. 6.
19. Ibid..
20. Ibid..
21. Smythe, M., "Don't Call Me A Stylist", New Zealand Economist, (May 1978), p. 9.
22. Goldfinch, A.J., "Overseas Marketing of Dairy Products", in Marketing in New Zealand, J.O. Rimmer, editor, Hicks Smith & Sons Ltd., Wellington, (1972), p. 275.
23. Probine, M.C. and Stuart, G.F., "Access to/use of Technology". address to the Workshop Small Scale/High Value, Wellington, (Sept. 20-22, 1977), p. 5.
24. Ibid..
25. McCrae, B., "New Technology for the 1980's", N.Z. Export Journal, (Dec. 1979), p. 4.
26. Berryman, W., "High Technology Kiwi Ingenuity Earns a Hearing", National Business Review, (Nov. 19, 1979), p. 8.
27. Probine and Stuart, p.2.
28. Twiss, p. 3.
29. Downes, K.E., "Research and Development are Hard Working Twins", in Marketing in New Zealand, J.O. Rimmer, editor, Hicks Smith & Sons Ltd., Wellington, (1972), p. 98.
30. Probine, M.C., "Applying Technology to Boost Industry", New Zealand Economist, (Dec. 1977), p. 7.
31. Dennis, p. 11.
32. Probine, op.cit..
33. Mrak, E.M., "The Food Technologist", Food Technology in New Zealand, (June 1966), p. 257.
34. Marsland, p. 83.
35. Grant, p. 8.
36. Bridges, J.S., "Marketing in New Zealand - Growing Towards Maturity", in Marketing in New Zealand, J.O. Rimmer, editor, Hicks Smith & Sons, Wellington, (1972), p. 3.
37. Earle, M.D., "Product Development and Marketing", Food Technology in New Zealand, (Jan. 1968), p. 11.



38. Lilico, D. and Burgess, J., "Product Development for Exports",  
New Zealand Export Journal, (Dec. 1979), p. 15.
39. Donaldson, J.D.B., Cook, J.D., Earle, M.D., McLusky, N.H.,  
Sinclair, C.E., The Market for New Zealand Processed  
Foods in North America and the E.E.C., A report to the  
Department of Trade and Industry, New Zealand, April-May  
1979, Prepared by the Export Opportunity Team, Department  
of Trade and Industry, Wellington (1979), p. 168.

## CHAPTER SIX

### RESEARCH OBJECTIVES AND METHODOLOGY

#### 6.1 Research Objectives

1. To examine and describe the product development and product management functions among selected firms in the New Zealand industry;
2. To identify the major variables that contribute to successful product development in these firms from the point of view of the executive in charge of the marketing/product function;
3. To identify the major causes of new product failure in these firms;
4. To isolate the common elements in those variables regarded by the executives as being important to successful product development and to reduce them to the significant factors;
5. To compare (as identified in the factor analysis) the attitudes of New Zealand managers towards both the generally accepted variables and the actual practices in their companies.

#### 6.2 Sample of Companies

A random sample of twenty four companies in the New Zealand food industry were selected for interview from a reference index of the food industry.<sup>1</sup> These twenty four companies constituted 8 per cent of the three hundred companies representing each of the following recognised product groups within the industry:

Ice Cream products  
Fruit and Vegetable Processing  
Fish Processing  
Grain Milling  
Bread Bakeries

Biscuit and Confectionery  
Food Preparations  
Poultry Processing  
Meat Processing  
Producer Boards

Another criterion for selection was for the companies to have been primarily New Zealand owned. Given the methodology chosen for the research, i.e. a personal interview with each company, it was not possible to consider a larger, more statistically reliable sample. The sample therefore was considered to be representative of the various product groups within the industry and to provide information for a pilot survey of the industry.

### 6.3 Questionnaire

The questionnaire was directed to the person in each company who was responsible for the product development and/or marketing function. In instances where this individual had only been with the company for a period of less than one year, the chief executive completed the questionnaire.

The questionnaire was designed to introduce each executive to the topic of the study and to identify particular facts about the company relevant to the study; organisation of the company, background of the executive, ownership, production, distribution of products including export, range of products.

As part of the questionnaire design, a study was made of the literature to identify variables associated with successful product development and with causes of new product failure. These literature references are discussed in Chapter Four. Where variables were repeatedly found to be relevant in more than one study, they were selected for inclusion in the questionnaire. Nineteen variables relating to the product and covering the topic areas of the company, the market, the personnel, and the development were used and are found in question 27 (see Appendix A). Assessment of the degree of importance of each variable for successful company product development was made according to a seven point Likert scale,<sup>2</sup> ranging from very important to not at all important [to successful product development]. Variables were rotated among the questionnaires to avoid order bias.

#### 6.4 Method

Agreement by the individual company to participate in the study was sought by telephone and personal correspondence. The questionnaire was forwarded to the appropriate executive. Within two weeks of mailing of the questionnaire a personal interview was carried out with this executive, during which time the questionnaire served as a guide and topics were covered in more detail. These interviews were carried out in May and August 1978.

#### 6.5 Analysis

##### 6.5.1. Statistical Analysis of Questionnaire

The questionnaire was analysed for each individual company and confidentiality was retained by numerically coding each response and entering it into a Burroughs 6700 computer. The data were analysed according to the procedures of the SPSS Programmes "Frequency" and "Crosstabs".<sup>3</sup>

##### 6.5.2. Factor Analysis

One section of the questionnaire (Question 27) was devoted to measuring the attitudes of executives by use of a Likert scale measurement. The seven points of the scale were weighted and values were entered into computer. "Frequency" and "Crosstab" programmes were again used in analysis and the data were used in the multivariate programme for factor analysis - Method PA2, with varimax rotation.<sup>4</sup> In this analysis, it was intended to identify a small set of factors to assist in identifying the types of variables that were seen to be important for successful product development in this industry.

Used in this way, factor analysis was a measuring device to provide indices to be used as new variables in later analysis.<sup>5</sup> The use of factor analysis with data from 18 variables was entirely satisfactory as indicated by other authors.<sup>6,7</sup>

The factor analysis involved the following decision steps:

1. Raw data from the weighting of the Likert scale were entered on computer and the correlation matrix was calculated as the first step in computer analysis. This matrix showed that many variables were highly correlated (with correlation coefficients of over 0.50) indicating that the variables might be explained more clearly by a few generalised dimensions.

2. Principal component analysis was the technique used for extracting the initial factors. This means that the linear combinations of the variables were chosen so that each set of scores accounted for a decreasing proportion of variance, i.e. the first factor accounted for the most variance among the original variables.<sup>8</sup>
3. The number of factors to be selected from the analysis was determined from observation of the eigenvalues (latent roots). Each eigenvalue summarized a fraction of the total variance of all the variables. Where the eigenvalues were greater than one, the factors were considered to be significant.<sup>9,10</sup> For this analysis, five factors were extracted on the basis of this criterion.
4. Varimax rotation of the reference axes was carried out to achieve a simpler and theoretically more meaningful factor solution.<sup>11</sup> The effect of this rotation was to redistribute the variance from earlier factors to later factors in the analysis to achieve a more easily understood solution.
5. A factor loading represents the correlation between each of the variables in a particular factor and that factor. The literature considers a general 'rule of thumb' to be advisable for determining the significance or non-significance of the factor loadings for each variable. This 'rule of thumb' is that for sample sizes of less than 100, the lowest factor loading to be considered significant should be 0.30.<sup>12</sup> For this analysis it was decided that a meaningful significance for interpretation was 0.50 because of the small number of variables.
6. The highest loaded items of a factor are the best indicators of the variables common to that group. The negative values do not affect the interpretation. The absolute size of the loadings rather than the signs are most relevant.<sup>13,14</sup> This was a consideration in terms of the interpretation of some factors in this study.
7. The variance of each variable summarized over all the factors is called the communality of the variable. Large communalities

indicate that a large amount of variance for that particular variable was extracted by the factor solution. This was a useful index for assessing variance and interpreting the factors of the study.<sup>15,16</sup>

8. Many authors point out the necessity in some research situations to continue factoring the data until interpretation of the factors is clear. This occurs especially in situations where there are no advance ideas about the amount of variance which might be explained by the analysis or where factors other than the first add only small percentages of total variance to the factor interpretation. In this analysis the most meaningful interpretation was made from five of the six rotated factors, representing 95 per cent of the variance, after refactoring was carried out to confirm the factor loadings.

#### 6.5.3 Descriptions of Company Operation

A separate but important feature of the analysis was a brief description of company operation for each of the 24 companies in the sample. These descriptions were based on the questionnaire results, the personal interview with the executive in charge of the product/marketing function at the time, and copies of the company's annual reports in instances of public companies. The purpose of the descriptive summaries was to provide a link between the qualitative and quantitative data which was collected for the research. These descriptions appear in the thesis as Appendix C.

## FOOTNOTES

CHAPTER SIX: Research Objectives and Methodology

1. Cleland, A.C. and Earle, M.D., "Energy Use in Food Manufacturing Industry", New Zealand Energy Research and Development Committee, Auckland, private communication.
2. Tull, D.S., and Hawkins, D.I., Marketing Research, MacMillan, New York, 1976, p. 348.
3. Nie, N.H., Hull, G.H., Jenkins, J.G., Steinbrenner, D., Bent, D.H. Statistical Package for the Social Sciences, 2nd edn., McGraw-Hill, New York, 1975, p. 230.
4. Ibid., p. 469.
5. Ibid..
6. Hair, J.F., Jr., Anderson, R.E., Tatham, R.L., Graldowsky, B.J., Multivariate Data Analysis, Petroleum Publishing Company, Tulsa, (1979), p. 235.
7. Mukherjee, B.N., "A Factor Analysis of Some Qualitative Attributes of Coffee", in Multivariate Analysis in Marketing: Theory and Application, D.A. Aaker, editor, Wadsworth Publishing Co. Inc., California, (1971), p. 245.
8. Green, P.E., and Tull, D.S., Research for Marketing Decisions, 3rd edn., Prentice-Hall, Englewood Cliffs, N.J., (1975), p. 536.
9. Hair, et.al., p. 231.
10. Gendall, P.J., The Use of Discriminant Analysis, Factor Analysis, and Non-Metric Multidimensional Scaling in Marketing Research, unpublished M.Sc. thesis, University of Newcastle-upon-Tyne, England, (August 1978), p. 41.
11. Hair, et.al., p. 226.
12. Ibid., p. 236.
13. Gendall, p. 41.
14. Gorsuch, R.L., Factor Analysis, W.B. Saunders, Philadelphia, (1974) p. 166.
15. Wells, W.D. and Sheth, J.N., Factor Analysis in Marketing Research, in D.A. Aaker, editor, Multivariate Analysis in Marketing: Theory and Application, Wadsworth Publishing Co. Inc., California, (1971), p. 215, 224.



16. Hair et al., p. 240.
17. Wells and Sheth, p. 219.
18. Overall, J.E. and Klett, C.J., Applied Multivariate Analysis, McGraw-Hill, New York, (1972), p. 108.

CHAPTER SEVEN  
SUMMARY OF RESULTS

Twenty four companies of the food industry agreed to participate in the survey. The executive of the company with the most responsibility for marketing completed a questionnaire and was personally interviewed on the subject of product development. The following summary represents the major findings of this survey and can be said to be indicative for the industry but not representative of it.

The results are presented in sections which represent the important areas for product development as discussed throughout this thesis: the company, the market, the personnel, and the development.

7.1 The Company

(Refer Tables B.6 to B.11, B.25, B.27)

The companies represented the various sections of the food industry as shown below in Table 1.

Table 1  
Responding Companies in Food Industry Sectors

	n	%
Biscuit and Confectionery	1	4.2
Bread Bakeries	1	4.2
Cereals	1	4.2
Fish Processing	2	8.3
Food Preparations	6	25.0
Fruit and Vegetable Processing	5	20.8
Grain Milling	2	8.3
Ice Cream	1	4.2
Meat Processing	3	12.5
Poultry Processing	1	4.2
Producer Boards	1	4.2
Total	24	100 %

These 24 companies represented 8 per cent of companies in the food industry. Twenty one of these companies (88%) were New Zealand owned. A majority (56%) of companies were controlled by non-family members and the number of shareholders in companies was directly related to the company's size. The companies were grouped for analysis according to the number of employees in the firm as stated on the questionnaire. In some instances the number referred to the entire corporation where others referred to the division operations.

Large firms: over 1,000 employees:

Borthwick-CWS Limited  
 General Foods Corporation (N.Z.) Limited  
 Haymarket Foods Division of L.D. Nathan and Co. Ltd.  
 R. & W. Hellaby Limited  
 Waitaki N.Z. Refrigerating Limited  
 J. Wattie Canneries Limited

Medium firms: 100 - 1,000 employees:

Aulsebrooks Limited  
 Cerebos Foods (New Zealand) Limited  
 T.J. Edmonds Limited  
 Hansells (N.Z.) Limited  
 Lochland Seafood of Donaghys Industries Limited  
 New Zealand Apple and Pear Marketing Board, Processing  
 Section  
 New Zealand Flourmills Limited  
 Reckitt and Colman (New Zealand) Limited

Small firms: 0 - 99 employees:

Boss Sauce Company Limited  
 Burwood Poultry Processors  
 Emma Foods Limited of Meadow Mushrooms Limited  
 Healtheries of New Zealand Limited  
 Independent Fisheries Limited  
 Premi Foods (N.Z.) (1977) Limited of Rangitaiki Plains  
 Dairy Company  
 Quality Bakers of New Zealand Limited (representing  
 approximately 25 bakeries)  
 Tasti Products Limited  
 Tauranga Fruit Processors Limited  
 Taura Fruit Industries Co-operative Limited

The majority of small firms were private companies while all large firms were public companies. Companies in the survey provided good representation of product types within the food industry. The dairy industry and brewing industry were not selected for the survey because of the unusual organisation of these industries. There was an even representation of all production processes as shown in the following table, giving percentages of all processes represented by the companies.

Table 2  
Production Processes Represented

	n	%
Baking	5	9.6
Bottling	9	17.3
Canning	11	21.1
Chilling	2	3.8
Drying	9	17.3
Freezing	10	19.2
Fresh	6	11.5
Total	52 <sup>(1)</sup>	100 %

- (1) Respondents could engage in more than one process each  
Percentages represent processes used by all responding companies

The majority of companies interviewed (86 %) said they set company objectives for one year periods. Fifty-four per cent of companies said they set objectives for a longer time span such as for three to five years. In many companies, planning was not a formal company activity. In 92 per cent of responding companies it was indicated that plans were made to add or drop products from the existing product mix which indicates product activity in the companies.

Companies placed a high emphasis on marketing in 58 per cent of firms interviewed but policies of creativity in product development were given a high emphasis in only 33 per cent of companies. Research and development had a low emphasis in company policy among 52 per cent of companies. The majority of companies had either a marketing or sales unit within the company as well as a laboratory or quality control area.

## 7.2 The Market

(Refer Tables B.10 to B.24)

The majority of companies (79 %) distributed products to domestic markets throughout all of the major centres of New Zealand. Most products sold by these companies within New Zealand were marketed to household consumers. This finding was the same for small companies as for large companies.

Some companies declined to give information about market share

and competitive status of products even though specific products need not have been named. In the 17 companies that did give such information, the first product listed was felt to have a market share of between 25-50 per cent against strong competition and the second product listed was felt to have a market share of over 75 per cent against strong competition. Generally this finding indicates that companies were aware of other firms in their markets and that the domestic market for each company represented a competitive situation for some but not all products.

The majority of companies (75%) evaluated their product mix and the same number made an evaluation in terms of company sales per product of the mix. It is interesting to note that one third of the large firms as classified in the analysis did not evaluate their product mix.

Four firms did not export products. Of those companies that did export, 60 per cent estimated export sales at less than 10 per cent of total manufacturing sales. The majority of these firms were in the medium company classification.

One third of the companies that did export products had been exporting for more than 15 years while 61 per cent of companies that exported had begun exporting at least one new product in the 1978 year (1978 was declared Export Year in New Zealand). The majority of exporting companies in the sample used canning or freezing as the process of production for products exported. The same products were often produced for the export market as for the domestic market.

Some interesting findings were noted in exporting companies when their export sales were considered as a proportion of their total sales: companies whose percentage of export was up to 15 per cent of total manufacturing sales = "low export"; companies whose percentage of export was over 15 per cent = "high export" (Table B.22.). The majority of companies (65%) exported a low level (less than 15%) of product in terms of overall company manufacturing sales.

Table 3Size of Exporting Company

	Small Company	Medium Company	Large Company	Total n    %	
Low % of export	4	6	3	13	65.0
High% of export	2	2	3	7	35.0
Total				20	100 %

This low level of export confirmed another study of the New Zealand food industry (1978) which indicated that of product types produced in New Zealand (excluding the large meat and dairy companies) 28 per cent were exported. Of the product types exported, 76 per cent represented less than fifteen percent of the total production figure for that product type.<sup>1</sup>

Together these studies indicated that New Zealand companies in the food industry did not export a very high percentage of their production and only a relatively few companies in the industry were exporting products.

Four companies, 57 per cent of those exporting over 15 per cent of total sales, felt there was no need to change their current product line (Table 4).

Table 4Product Policy of Exporting Company

	Innovators	Wait to Adopt	No Need to Change	Total n    %	
Low % of export	6	4	-	10	58.8
High% of export	1	2	4	7	41.2
Total				17	100 %

Six companies, 86 per cent of those that exported over 15 per cent of total sales, did not evaluate their product mix (Table 5).

Table 5

Evaluation of Product Mix by Exporting Company

	Evaluate Product Mix	Do Not Evaluate Product Mix	Total	
			n	%
Low % of Export	10	-	10	58.8
High% of Export	1	6	7	41.2
Total			17	100%

7.3 The Personnel

(Refer Tables B.1 to B.5, Question 10)

The following table indicates that the person most responsible for product management and development in companies of the sample was the chief executive of the company.

Table 6

Product Management Responsibility

	n	%
Product Manager	4	16.7
Marketing Manager	4	16.7
General Manager (or Chief Executive)	13	54.2
Technical Manager (i.e. Research & Development or Quality Control Personnel)	3	12.5
Total	24	100%

Classification of Manager by his age grouping at the time of interview indicated that many managers responsible for the product and its development were quite young (less than 40 years of age) as indicated in Table 7.



Table 7 .

Age of Respondent by Title of Responsibility

	Years					Total	
	20-29	30-39	40-49	50-59	60-69	n	%
Marketing Manager	2	1	1	-	-	4	16.7
Chief Executive	2	2	5	3	1	13	54.2
Product Manager	1	3	-	-	-	4	16.7
R & D Manager	-	1	-	-	-	1	4.2
Product Development or Quality Control	1	1	-	-	-	2	8.3
Total	6	8	6	3	1	24	100%

The person most responsible for the product function in the company had been in that position for less than three years in the majority of cases (55%). In most instances, the person's immediate previous job was with the same company, especially in the case of medium and large firm classifications. Fifty-nine per cent of the executives interviewed had tertiary education qualifications. The success of any product depended to a large degree on the personnel who directed its development in a majority of responding firms (59%). Of companies that gave this response, 54 per cent were classified as small firms.

7.4 The Development

(Refer Tables B.26 to B.47)

All companies in the sample had developed a new product and 81 per cent had experienced a product failure. The influence of technology on the development of products in the majority of companies (48%) was high. There was evidence (in 43 per cent of companies) that some emphasis was placed on systematic product development but this was neither particularly heavy nor particularly low. Of these companies, 60 per cent were from the small business classification. The majority of executives (57%) felt their company's product policy was one of being innovators in product development. Ninety-two per cent of the executives who made this statement were in the small or medium classification of firms.

#### 7.4.1 Major Variables for Successful Product Development

Respondents were asked to give their opinions as to what they considered to be of importance to successful product development in their company. Table 8 shows the major responses in terms of the first two variables mentioned by each respondent.

Table 8

Major Variables for Successful Product Development

	n	%
Consumer research/knowledge of the consumer	7	21.2
A unique product	6	18.2
Consumer demand for the product	4	12.1
Attitude of company senior management	3	9.1
Good idea generation and evaluation	3	9.1
Staff marketing and/or development strength	4	12.1
Good communication between marketing and technical staff	2	6.1
Price of the product	2	6.1
Packaging of the product	2	6.1
Total	33	100%

It should be noted that responses to question 29 ("Do your ideas of these major factors differ from your company's objectives") were nearly all "no". One respondent felt his company should carry out formal planning where they did not at the time of interview.

Respondents also evaluated several variables according to their importance to successful product development in the respondent's own company. These are evaluated in section 7.5 of this chapter and also in Tables B.28 to B.46 of Appendix B. In summary, however, it is interesting to note from the frequency analysis the results in Tables 9 and 10.

Table 9 indicates that company strength and knowledge in marketing and in technology were seen to be important to successful product development, all the while guided and supported by company senior management.

Table 9

Highest Summary Variables Considered to be Important<sup>(1)</sup>  
to Successful Product Development

	% of companies indicating importance
Experienced marketing staff	95.8 %
Senior management support	95.6 %
Communication between technical and marketing employees	95.5 %
The presence of a company marketing policy	91.7 %
A sound technical knowledge by the product manager	91.3 %

(1) Important = Very important + Quite important + Important,  
from the Likert scale measurement

Table 10 presents the variables given least importance to successful product development. Government assistance was certainly on its own as to the lowest percentage of respondents indicating importance (17%). Two variables in particular - use of continuous market research and heavy product promotion - often represent large company expenditures in relation to new products and are important ingredients in the marketing function.

Table 10

Lowest Summary Variables Considered to be Important<sup>(1)</sup>  
to Successful Product Development

	% of companies indicating importance
Heavy Product Promotion	66.6 %
A good economic environment	60.9 %
Use of continuous market research	60.0 %
Shortage of resources	58.5 %
Employees hired for their creativity	56.5 %
Government assistance	17.3 %

(1) Important = Very important + Quite important + Important,  
from the Likert Scale measurement

#### 7.4.2 Major Reasons for Product Failure

The major reasons for a product failure in the company are summarised in Table 11. Eighty-one per cent of responding companies had experienced a product failure.

Table 11  
Reasons for Product Failure

	n	%
Failure of the product to fill a consumer need	4	25.0
Market segment was too small to support the product	3	18.8
Shortage of raw material	3	18.8
Insufficient planning	2	12.5
Wrong time of launch	2	12.5
Lack of senior management support	2	12.5
Total	16	100 %

Other reasons given (but only by one respondent each) were in reference to promotion in the wrong segment of the market, poor product packaging, too difficult to produce the product, or too high a product price. Many of these variables presenting reasons for product failure relate to a lack of consumer knowledge on the part of the New Zealand company.

#### 7.5 Attitudes to Important Variables for Successful Product Development (Refer Tables B.28 to B.46)

As explained in Chapter Four, a number of variables repeatedly found in the literature as being related to successful product development were selected and used in this study. Eighteen variables were listed and respondents were asked to assess the degree to which the items were important for successful product development in their company.

The analysis of the frequency of responses for these variables as shown in Appendix B, gave only an indication of the percentage of responses on each of the points of the Likert scale for any one variable. In order to make a more meaningful analysis as to which variables give

a common measure of relevance to successful product development, the multivariate technique of factor analysis was used.

Generally, factor analysis is defined as "a multivariate statistical technique that addresses itself to the study of interrelationships among a total set of observed variables".<sup>2</sup> The general purpose of factor techniques is to find a way of summarizing the information given by several original variables into a smaller set of composite factors with minimum loss of information.<sup>3</sup>

Table 12 presents the principal component matrix. Factor loadings for six factors are shown as determined by observation of the eigenvalues. Table 13 identifies the significant factor loadings after rotation and is the basis for interpretation.

Table 12

Initial Factor Loadings Matrix: Principal Component Solution

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Communality
- Good relations in market place	.03	.04	.38	.24	-.02	-.14	.45
- Experienced marketing staff	.27	.24	.54	.10	.63	.02	.77
- A R & D section in the company	.74	.02	.14	-.03	-.30	.05	.82
- Employees hired for their creativity	.79	.12	.39	.04	-.03	-.17	.86
- A good economic environment	.12	-.79	-.32	.38	.16	-.14	.88
- Government assistance	.47	.03	.07	.48	-.02	-.13	.74
- Shortage of Relevant Resources	.68	-.00	-.10	-.04	.10	-.33	.73
- A strong need in the marketplace	.48	-.62	-.05	.12	-.05	.10	.88
- Constant idea generation	.81	.02	-.07	-.39	-.25	-.03	.92
- Senior manage- ment support	.89	-.25	.07	-.28	-.10	.10	.94
- A company market policy	.49	.56	-.18	-.18	.05	-.29	.80
- Availability of finance	.39	.52	-.07	.60	-.23	.07	.89
- Longterm planning	.45	.67	-.36	.07	.11	.06	.91
- Heavy product promotion	.27	.42	-.50	.00	.22	.26	.69
- Personality of product manager	.40	-.36	-.15	-.24	.32	-.18	.79
- Sound technical knowledge	.71	-.28	.33	.16	-.02	.28	.81
- A unique product	.66	-.21	-.42	.05	.22	.25	.74
- Communication - technical & marketing	.07	.15	.49	-.23	.13	.24	.60
- Eigenvalue (sum of squares)	5.66	2.88	2.04	1.57	1.14	1.01	
- Variance summarised	31.5	16.0	11.4	8.7	6.3	5.6	
- Cumulative variance	31.5	47.5	58.8	67.5	73.9	79.5	

Table 13

Major Factors: Varimax Rotated Principal Factors

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Communality
- Experienced marketing staff					.87		.83
- A R & D section in the company	.76						.67
- Employees hired for their creativity	.67						.84
- A good economic environment			.92				.94
- Government assistance				.58			.47
- Shortage of relevant resources						.52	.59
- A strong need in the marketplace			.61				.65
- Constant idea generation	.86						.89
- Senior management support	.92						.96
- A company market policy		.57					.70
- Availability of finance				.80			.85
- Long term planning		.77					.80
- Heavy product promotion		.78					.61
- Sound technical knowledge	.68						.80
- A unique product			.56				.77
- Communication - technical and marketing						.50	.40
- Variance Summarised	43.4	21.2	13.5	9.9	7.1	4.9	
- Cumulative Variance	43.4	64.6	78.1	88.0	95.1	100.0	



Five factors that describe successful product development were labelled and are defined in Table 14. The factors explained 95 per cent of the variance of the six rotated factors and therefore can be said to describe attributes of successful product development fairly well. Only one variable showed a significant factor loading on the sixth factor and it was decided that the most meaningful interpretation was to be made from the first five factors.

The factors were quite easy to label but it should be noted that such labels have no significance other than their convenience. The importance lies in the concepts shown by the particular combination of variables.

Factor one, "innovative and technological company orientation", is described by such variables as a research and development section in the company; employees who are hired for their creativity; constant idea generation; a sound technical knowledge; and a high factor loading for senior management support for new product development. Many of these are considered to be basic parts of the product development process (Chapter 2.1), particularly creativity, idea generation, and technological knowledge. It is interesting that senior management support is one of the strong dimensions in this factor.

The second factor describes many of the variables that the company in general contributes to successful product development and can therefore be labelled "supportive company structure". Long term planning by the company and heavy product promotion have particularly high loadings.

The variables in factor three can be interpreted as referring to "consideration for the consumer". A good economic environment suggests that if consumers have discretionary income and a comfortable standard of living they are able to support new product development. A strong need in the marketplace is a descriptive variable referring again to the consumer's wants and product uniqueness is important in identifying the consumer market segment.

Factor four consists of two variables which can best be described as "security for development". The two variables were government assistance and availability of finance.

Table 14  
Major Factors Defined

Factor	factor loading(1)
1. <u>Innovative and technological company orientation</u>	
A research and development section in the company	.76
Employees hired for their creativity	.67
Constant idea generation	.86
Senior management support for new product development	.92
A sound technical knowledge by the product manager	.68
2. <u>Supportive Company Structure</u>	
Presence of a general company marketing policy	.57
Longterm planning by the company	.77
Heavy product promotion	.78
3. <u>Consideration for the consumer</u>	
Good economic environment	.92
A strong need in the market place	.61
A unique product (not a copy)	.56
4. <u>Security for development</u>	
Government assistance	.58
Availability of finance	.80
5. <u>Well-rounded company marketing</u>	
Experienced marketing staff	.87
Communication between technical and marketing employees	.50

(1) Varimax Rotated Principal Factors

Factor five also is a composite of two variables. Experienced marketing staff and communication between technical and marketing employees indicated that marketing was important to new product development but also that the marketing effort encompassed more than a token position in the development process. Therefore the factor level of "well-founded company marketing" seems descriptive.

In summary, the five factors are mentioned in order of their importance in accounting for the total variance and cumulative variance in the analysis. Collectively these five factors account for 95 per cent of the variance from company executive's rating of the eighteen variables according to importance for successful product development within their own company. Factor one, innovative and technological company orientation, accounts for 43 per cent of that total variance.

## FOOTNOTES

CHAPTER SEVEN: Summary of Results

1. Cleland and Earle, private communication, January, 1980.
2. Wells and Sheth, p. 213.
3. Hair, et.al., p. 218.

## CHAPTER EIGHT

### CONCLUSIONS AND RECOMMENDATIONS

#### 8.1 Practices of Product Development

Product development is the process by which companies bring a new product to the marketplace and it can involve changes in either the product, the market or both. There is little doubt that product development is not only relevant but vital to the food industry in New Zealand and evidence indicates that there is a great deal of product activity within New Zealand food companies.

The purpose of this research was to identify current methods of product development, both generally and in New Zealand in particular, and to evaluate current New Zealand practices in relation to product development in the food industry. A further objective was to isolate those factors that contribute to success and to failure in product development. The work focused on three topics: planning, systems and management.

Planning is a management function involving the best use of resources to achieve specific company, department and product objectives. Planning for product development emphasizes knowledge in the areas of design, technology and marketing and co-ordination of company resources: it gives direction to both the developmental process and the systems used to manage it.

There is a recognised process of product development which above all is an orderly arrangement of developments toward a specified objective. There are different types of processes but each requires both active and passive skills. The active skills of the process include planning, exploration, screening, analysis, development, testing and commercialization. The passive skills are related to

essential knowledge and fall into one of three specific areas: design creativity, technology and marketing. Some of these skills may not exist within the company, even the largest one. Management therefore must select the process appropriate to its own company and co-ordinate the activities of the development process.

There are four general types of management organisation for product development, each adaptable to companies of different size and structure. Organisation specifically for product development means a commitment on the part of management to a product development programme and this commitment is directly related to successful product development.

There is a high failure rate in the process of product development. To minimize losses it is important that management recognize the variables relevant to success or failure and to incorporate this knowledge into the evaluative criteria for each phase of the company's product development system.

Against this background of product development as it is generally understood and practiced, the research indicated areas of strength and weakness in product development in the New Zealand food industry. Planning in the companies examined did occur, most often on a short term (one year or less) basis, but planning was rarely a formal exercise extending to levels other than the general company level. Most companies indicated that the product policy was one of innovation. This innovation was not necessarily the result of structured product planning and this point is reinforced by the low emphasis placed by companies on systematic development.

The development process, in the sense of an orderly arrangement and management of activity, hardly exists in the New Zealand food industry. Although the survey showed that there was considerable product activity in the food industry, this activity was not seen by companies as part of a complete, active process from idea exploration to product launch. There was less emphasis placed on idea generation, evaluation, and consumer testing than on technological input and commercialization. Among the active skills, product development did not merit high priority in terms of company resources such as time and personnel. This was evidenced by the relatively young ages of those in control of product development decisions and the fact that in the majority of companies interviewed the product

function was carried out by a single executive whose main responsibility in the firm was some other function, i.e., general manager.

In terms of passive skills - knowledge of design, technology and marketing - there was clear evidence of the importance placed on technology and laboratory work, and the successes attributable to this emphasis, but there was considerably less importance attached to creativity of products. Creativity and innovation were seen to be skills that simply happened; there was no awareness that these skills might be managed.

Management in the product development area was most frequently the responsibility of one person and rarely was his title or function as specific as 'product manager'. There was no evidence of product development departments or committees or teams for the management of new product development.

Personnel have had an important impact on product development in the companies interviewed. This impact was more in terms of dedication to the product rather than a particular knowledge or expertise in one area and is not contrary to the conclusion that personnel responsible for these decisions were young, inexperienced and in many instances were chiefly preoccupied with another role in the company.

## 8.2 Attitudes to Product Development

In addition to reviewing general practices in product development and current practices in New Zealand, the research measured executive's attitudes towards this important business function. When these attitudes were measured against generally accepted practices and against specific New Zealand practices, two key observations were made. Firstly the New Zealand food product development managers did not find all of the variables from overseas to be important to their company. And secondly, although the research revealed some correlation between perception and conduct of the function, it also indicated several important discrepancies between the manner in which successful product development is perceived in this industry and the manner in which it is practiced.

Assessment of eighteen variables were correlated and reduced through factor analysis to five descriptive factors which provided a subjective description of groups of variables regarded by management



as being related to successful product development. In other words, each variable in a given group implied a similar concept within the same dimension. These dimensions made sense to and have meaning for managers and are close to what they actually thought about the function.

The following five factors are what New Zealand product management in the food industry thought was important for product development success: an innovative and technological company orientation; a supportive company structure; consideration for the consumer; security for development; a well-rounded company marketing emphasis. It is when these five important perceptions were measured against practices as understood from overseas literature and actual New Zealand practices that certain omissions, correlations and discrepancies were revealed.

First consider the omissions because they reveal the uniqueness of the New Zealand business environment and reflect on its past patterns. Taken together, the five factors only account for fifteen out of the eighteen generally accepted variables. The three regarded as being non-significant were: good relations in the market channels, shortage of relevant resources and personality of the product manager.

These reflect the fact that the New Zealand food industry has produced essentially for a domestic market, largely protected from competition, and stable external markets. Operating in a small country and through established overseas channels, there was no necessity for New Zealand businesses to emphasize good relations in the market channels. Understandably, a strong sales and distribution emphasis were not significant factors in product success. Nor was there a shortage of relevant food raw material. The personality of the product manager was not important when he was, as in most cases, the only person involved in product development and when co-ordination between several development phases was not practiced.

It is suggested, however, that at a time when the New Zealand food industry places added emphasis on the development of new markets, these three variables may become significant for success in product development. Some of the export potential exists in markets where strong competition also exists, where distribution is a problem, and where regular supply of the product may be critical for securing and

maintaining an adequate market share.

Turning to the variables that were considered to be important by New Zealand managers, several observations should be made about what was perceived and what was actually practiced.

Managers believed that an innovative and creative approach was required for successful product development. Although there was evidence to show that companies in the food industry were strong in some aspects of technology, there was little evidence to indicate that innovation was encouraged or structured and emphasis on creativity was low. The research did not indicate organised interaction between technical, creative and marketing activities.

Managers indicated that there was a need for a supportive company structure. The research indicated that the person responsible for product development decisions was a chief executive in many instances and this represented an important supportive variable. The research also indicated that personnel involved in product development were generally young and relatively inexperienced in the techniques of the company. Company planning, another supportive variable, was carried out at the company level and over the short term but there was little formal planning activity at the product level or for the longer term.

Knowledge of the consumer was regarded as a variable important to successful product development, as were recognizing the importance of a unique product and identifying a need in the market place. Nonetheless, products for export were generally the same as those produced for the domestic market and these in turn were often copies of products developed by other companies operating externally. Also the reasons given by managers of the New Zealand companies for specific product failures in their companies were basically related to a lack of knowledge of the consumer market.

Security for development was considered to be a requirement for success and basically this referred to financial security and government support. This factor was emphasized by the smaller companies in particular. However, at the point of this survey, the results showed that government support was not a contributing variable to the companies' product development.

The perceived marketing requirement for successful development is best described as being well-rounded, encompassing many aspects of the process. The research showed that there were considerable marketing skills in the companies studied. But there were indications that marketing practices were weak in relation to knowledge of the consumer, determination of the new market potential and new product development.

### 8.3 Recommendations

These conclusions indicate both strengths and weaknesses in current practices of new product development in the New Zealand food industry. They are based on a small random survey. A much more comprehensive study will be needed in order to determine if these conclusions are valid for the industry as a whole. In the interim, the following recommendations are offered as possible ways to improve the success of product development for domestic markets but importantly also for the development into export markets which is currently stressed in New Zealand industry.

- management should formally plan product development as a regular part of company activities;
- product development should be regarded as an organised and structured process;
- businesses should develop management systems emphasizing full utilisation of personnel, including an integrated development approach;
- companies, especially smaller ones, should make use of skills outside of the company but manage the whole process themselves;
- innovation and creativity should be regarded as an integral part of the development;
- special attention should be paid to consumer research in relation to product design, testing and development; and
- management should undertake regular and methodical evaluation of new products at each stage of the development process.

Marketing in general was not part of the purpose or design of the present research. It was an assumption that marketing was an

established part of the New Zealand company structure but the research indicated that there were many instances where this was not true. The role of marketing generally in the food industry could be a subject for further investigation.

Finally, the full potential of the product development function for New Zealand companies will only be achieved when management realizes its value and undertakes to plan its activity. This will require an allocation of resources. To be effective, management must be able to relate product development processes to company performance. Some way should be found to objectively relate product research and development to standard performance indices such as return on investment, sales, profit increase, or product share of the market. Developing a technique for objective evaluation such as this could be the subject of further study.

## APPENDICES

	<u>Page</u>
Appendix A      Questionnaire	80
Appendix B      Tables of Detailed Results	90
Appendix C      Description of Company Operations	118

APPENDIX AA STUDY OF PRODUCT DEVELOPMENT AMONG SELECTED COMPANIES  
IN THE NEW ZEALAND FOOD INDUSTRY

1978

This questionnaire is to be completed by the Marketing Manager or person mainly responsible for product management within your company.

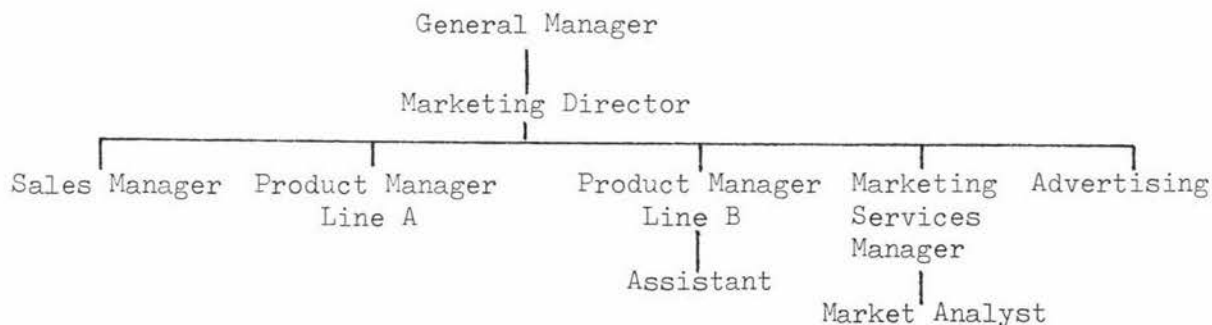
1. Company Name: \_\_\_\_\_
2. Your job title: \_\_\_\_\_
3. How long (months/years) have you held this position? \_\_\_\_\_
4. Before you accepted this position what was your job title and was this in your present company or some other?  
Previous job title: \_\_\_\_\_  
For which company: \_\_\_\_\_
5. What is your highest education level? Please define the area if it is applicable, e.g. New Zealand Certificate of Science, Food Science  
e.g. B.B.S., Personnel Administration  
\_\_\_\_\_
6. Please indicate your approximate age:  

20 - 29	<input type="checkbox"/>
30 - 39	<input type="checkbox"/>
40 - 49	<input type="checkbox"/>
50 - 59	<input type="checkbox"/>
60+	<input type="checkbox"/>

COMPANY DATA

Procedure: Tick one response or give numbers where applicable.

7. Nature of Company: Private ☐ or Public ☐
8. Number of employees for all New Zealand: -----
9. Shareholding:
- |                              | <u>New Zealand</u>       | <u>Overseas</u>          |
|------------------------------|--------------------------|--------------------------|
| (a) Ownership: (TICK ONE)    |                          |                          |
| - wholly                     | <input type="checkbox"/> | <input type="checkbox"/> |
| - majority                   | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) Control: (TICK ONE)      |                          |                          |
| - wholly family              | <input type="checkbox"/> | <input type="checkbox"/> |
| - majority family            | <input type="checkbox"/> | <input type="checkbox"/> |
| - wholly non-family          | <input type="checkbox"/> | <input type="checkbox"/> |
| - majority non-family        | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) Shareholders: (TICK ONE) |                          |                          |
| - large number               | <input type="checkbox"/> | <input type="checkbox"/> |
| - small number               | <input type="checkbox"/> | <input type="checkbox"/> |
10. In the space provided, please indicate general lines of authority that exist in your company by making an organizational flow chart for your division. For example:



11. Does your company try to achieve an overall objective

for any one year? Yes ☐ No ☐

for any 3-5 year period? Yes ☐ No ☐

PRODUCT DATA:

12. What is/are your basic product type(s)?

-----  
-----

13. Which of the following describe your product lines?

(TICK ALL THAT APPLY)

☐ bottled

☐ canned

☐ frozen

☐ baked

☐ dried

☐ chilled

☐ fresh

☐ other (specify)

☐ meat

☐ fish

☐ cereals

☐ vegetables

☐ fruit

☐ drinks

☐ dairy

☐ other (specify)

-----  
-----  
-----  
-----  
-----  
-----

14. What are the brand names for your main product lines?

1. -----  
2. -----  
3. -----  
4. -----  
5. -----  
6. -----



15. Which of the following buy your main product lines?  
(TICK ALL THAT APPLY)

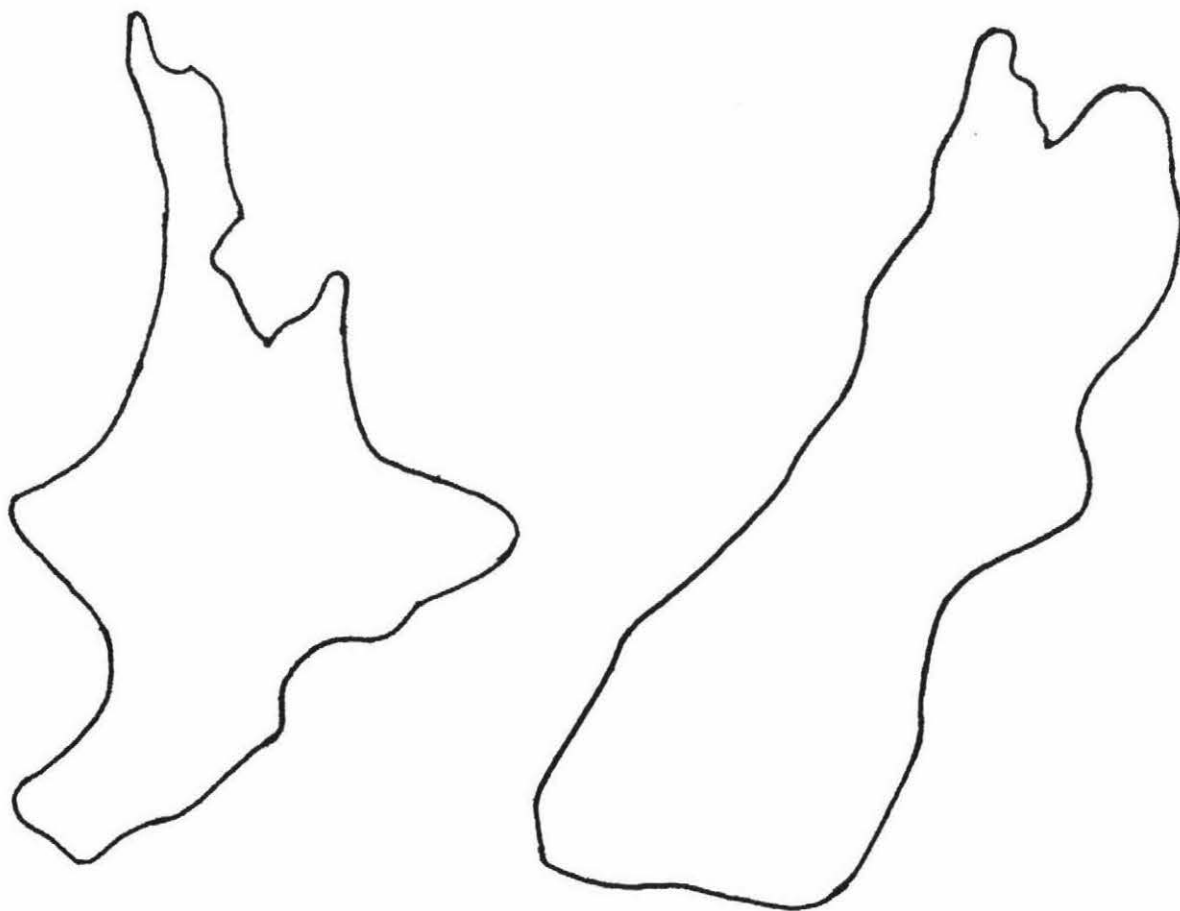
☐ caterers      ☐ institutions      ☐ households

☐ other processors

☐ others (specify) \_\_\_\_\_  
\_\_\_\_\_

16. Draw lines on the map below to indicate your market areas for your main product lines.

IF MARKET AREA IS ALL OF NEW ZEALAND, TICK ☐



17. What is the approximate market share in New Zealand for each of your main product lines.

Product Line (eg: canned soups)	% of market held by this product line in your market region					Would you say the competition for this product line was:		
	TICK ONE					TICK ONE		
	10%	10-24%	25-50%	51-75%	75%	Strong	Weak	None
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. Which of the following describe your product lines for export?  
(TICK ALL THAT APPLY)

<input type="checkbox"/> bottled	<input type="checkbox"/> meat
<input type="checkbox"/> canned	<input type="checkbox"/> fish
<input type="checkbox"/> frozen	<input type="checkbox"/> cereals
<input type="checkbox"/> baked	<input type="checkbox"/> vegetables
<input type="checkbox"/> dried	<input type="checkbox"/> fruit
<input type="checkbox"/> chilled	<input type="checkbox"/> drinks
<input type="checkbox"/> fresh	<input type="checkbox"/> dairy
<input type="checkbox"/> other (specify)	<input type="checkbox"/> other (specify)

-----  
-----  
-----  
-----

-----  
-----  
-----  
-----

19. What is the longest period of time you have been exporting a product line?

-----  
Which line?  
-----

20. What is the shortest period of time you have been exporting a product line?

-----  
Which line?  
-----

21. Approximately what percentage of your total manufacturing sales is from export? (an estimate will do)

-----%

22. Does your company evaluate its product mix regularly?

Yes ☐ No ☐ Don't know ☐

23. Does your company work out the percentage of its sales according to the product mix?

Yes ☐ No ☐ Don't know ☐

24. Does your company make plans to add products and/or drop products?

Yes ☐ No ☐ Don't know ☐

25. Which of the following best describes your general company policy?  
(TICK ONE)

- ☐ We are usually innovators in product development.
- ☐ We generally wait to adopt proven products, designs or ideas.
- ☐ We have well established products and usually have no need to change them.

26. For the following questions please indicate your personal opinion by ticking the box that most nearly shows your response.

Procedure:

TICK ONE RESPONSE FOR EACH ALTERNATIVE.

FOR EXAMPLE:

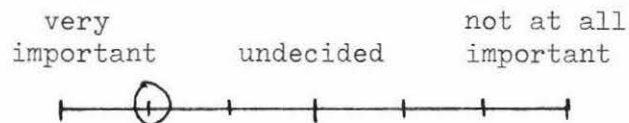
	<u>High</u>	<u>Medium</u>	<u>Low</u>
My own marketing knowledge is (high/medium/low):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- As a company policy our company places (high/medium/low) emphasis on marketing:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Our company emphasizes policy of creativity in product development to a (high/medium/low) degree:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Technology has a (high/medium/low) influence on the development of products within our company:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Research and development has a (high/medium/low) emphasis in our company policy:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- The success of any one of our products depends to a (high/medium/low) degree on the personnel who direct its development:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Our company places (high/medium/low) emphasis on systematic product development:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

27. Consider the following factors and assess, in your opinion, the degree to which they are important for successful product development in your company.

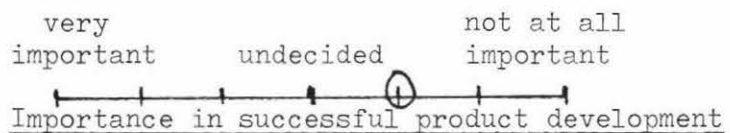
Procedure:

CIRCLE THE POINT ON THE SCALE THAT CORRESPONDS TO YOUR OPINION.

FOR EXAMPLE: If you feel that a good sales force is fairly important to successful product development you would circle:



If it is not particularly important to successful product development, you would circle:



- |   | very<br>important | undecided | not at all<br>important |
|---|-------------------|-----------|-------------------------|
| - constant idea generation                              |                   |           |                         |
| - senior management support for new product development |                   |           |                         |
| - presence of a general company marketing policy        |                   |           |                         |
| - availability of finance                               |                   |           |                         |
| - long-term planning by the company                     |                   |           |                         |
| - heavy product promotion                               |                   |           |                         |
| - personality of the product manager                    |                   |           |                         |
| - a sound technical knowledge by the product manager    |                   |           |                         |

PLEASE CONTINUE TO CONSIDER THE FOLLOWING FACTORS AND ASSESS THE DEGREE TO WHICH THEY ARE IMPORTANT FOR SUCCESSFUL PRODUCT DEVELOPMENT IN YOUR COMPANY.

	<u>Importance in successful product development</u>		
	very important	undecided	not at all important
- a unique product (not at copy)			
- communication between technical and marketing employees			
- good relations in the market channels			
- experienced marketing staff			
- a research and develop- ment section within the company			
- employees who have been hired for their creativity			
- good economic environment			
- government assistance in product development			
- shortage of relevant resources			
- use of continuous market research			
- a strong need in the market place			

For the following section of questions, please give your own personal opinions in the responses. Remember that the information from this questionnaire will serve as a basis for our discussion and will not be seen by anyone else.

28. What do you consider to be the major factors that are important to successful product development? (Approximately five will do).

29. In what way do your ideas of these major factors differ from your company's objectives?

30. Have you ever experienced a product failure (either in development or in the marketplace)?

Yes ☐ No ☐ Don't know ☐

If Yes: What, in your opinion, was the main cause of the failure?

THANK YOU FOR TAKING THE TIME TO HELP ME WITH MY RESEARCH.

SANDY WEST

## APPENDIX B

### TABLES OF QUESTIONNAIRE RESULTS

Introduction to the questionnaire results:

The following section outlines the results of the questionnaires completed by each company executive who had the most responsibility for the marketing/product function. Tables are in the form of percentage of responses to each alternative asked. For a more meaningful representation the companies were subdivided according to size by number of employees<sup>1,2</sup> and thus

small companies = 0-99 employees  
medium companies = 100-999 employees  
large companies = 1,000+ employees

In the tables, the number representing each item is represented by 'n' and will vary according to the correct (i.e. usable<sup>3</sup>) responses to that question. Figures are rounded to the nearest tenth percentage and in some cases do not equal exactly 100 per cent.

#### FOOTNOTES

1. Love, R.N., Report on Development Programmes for the Small Business Sector, MEDC, Massey University, New Zealand, (November, 1977), p. 4.
2. Devlin, M.H., LeHeron, R.B., Report to the Development Finance Corporation on Dimensions of New Zealand Small Business, Massey University, New Zealand, (December, 1977), p. 6.
3. In some instances executives were not prepared to divulge information which they felt was confidential.



INDEX OF TABLES OF DETAILED RESULTS

	<u>Page</u>
Table B.1 Title of Person in the Firm Responsible for the Marketing Function	93
Table B.2 Length of Time in this Present Company Position	93
Table B.3 Previous Job was with Which Company	94
Table B.4 Highest Education Level	94
Table B.5 Age of Respondent	95
Table B.6 Nature of Company	95
Table B.7 Shareholding	96
Table B.8 Company Objectives	96
Table B.9 Basic Product Types	97
Table B.10 Description of Product by Processes	97
Table B.11 Description of Product by Raw Material	98
Table B.12 Who Buys the Main Product Lines?	98
Table B.13 Major Market Areas for Main Product Lines	99
Table B.14 Market Share in New Zealand for First Product Listed	100
Table B.15 Strength of Competition for First Product Listed	100
Table B.16 Market Share in New Zealand for Second Product Listed	101
Table B.17 Strength of Competition for Second Product Listed	101
Table B.18 Description of Production Processes used for Export Products	102
Table B.19 Description of Raw Material Used in Export Products	102
Table B.20 Longest Period of Time Exporting a Product	103
Table B.21 Shortest Period of Time Exporting a Product	103
Table B.22 Export Sales as Percentage of Total Manufacturing Sales	104
Table B.23 Evaluate Product Mix	104
Table B.24 Evaluate Percentage of Sales/Product Mix	105
Table B.25 Plans Made to Add/Drop Products	105
Table B.26 Description of Company Product Policy	106
Table B.27 Respondent's Opinions on Company Policy	107
Table B.28 Good Relations in the Market Channels	108
Table B.29 Experienced Marketing Staff	108

22

INDEX OF TABLES OF DETAILED FINDINGS (CONTINUED)

	<u>Page</u>
Table B.30    A Research and Development Section Within the Company	109
Table B.31    Employees Who Have Been Hired for Their Creativity	109
Table B.32    Good Economic Environment	110
Table B.33    Government Assistance in Product Development	110
Table B.34    Shortage of Relevant Resources	111
Table B.35    Use of Continuous Market Research	111
Table B.36    A Strong Need in the Market Place	112
Table B.37    Constant Idea Generation	112
Table B.38    Senior Management Support for New Product Development	113
Table B.39    Presence of a General Company Marketing Policy	113
Table B.40    Availability of Finance	114
Table B.41    Long-term Planning by the Company	114
Table B.42    Heavy Product Promotion	115
Table B.43    Personality of the Product Manager	115
Table B.44    A Sound Technical Knowledge by the Product Manager	116
Table B.45    A Unique Product (Not a Copy)	116
Table B.46    Communication Between Technical and Marketing Employees	117
Table B.47    Have You Ever Experienced a Product Failure?	117

TABLE B.1

Title of Person in the Firm Most Responsible for  
the Product Development      Q.2

	Company Size			Total	
	Small	Medium	Large	n	%
Marketing Manager	-	2	2	4	16.7
Product Manager	1	3	-	4	16.7
R & D Manager	-	-	1	1	4.2
Product Development Manager	1	-	1	2	8.3
Managing Director	4	2	-	6	25.0
General Manager or Assistant	4	1	2	7	29.2
TOTAL				24	100%

TABLE B.2

Length of Time in this Present Company Position      Q.3

	Company Size			Total	
	Small	Medium	Large	n	%
Less than one year	2	-	2	4	17.4
One year	2	3	-	5	21.7
Two years	-	2	2	4	17.4
Three years	2	-	-	2	8.7
Four years	-	-	1	1	4.3
Five years	-	1	1	2	8.7
Six to ten years	2	1	-	3	13.0
Greater than 10 years	1	1	-	2	8.7
TOTAL				23	100%

TABLE B.3Previous Job Was With Which Company      Q.4

	Company Size			Total	
	Small	Medium	Large	n	%
Same Company	3	6	4	13	59.1
Other Company	6	2	1	9	40.9
TOTAL				22	100%

TABLE B.4Highest Education Level      Q.5

	Company Size			Total	
	Small	Medium	Large	n	%
School Certificate	1	1	-	2	9.1
University Entrance	2	3	2	7	31.8
University Degree	3	2	3	8	36.4
Postgraduate Degree	-	1	1	2	9.1
Professional Diploma	3	-	-	3	13.6
TOTAL				22	100%

TABLE B.5  
Age of Respondent      Q.6

	Company Size			Total	
	Small	Medium	Large	n	%
20-29 years	1	3	2	6	25.0
30-39 years	4	3	1	8	33.3
40-49 years	3	-	3	6	25.0
50-59 years	1	2	-	3	12.5
60-69 years	1	-	-	1	4.2
TOTAL				24	100%

TABLE B.6  
Nature of the Company      Q.7

	Company Size			Total	
	Small	Medium	Large	n	%
Private	9	3	-	12	50.0
Public	-	4	6	10	41.7
Co-operative	1	-	-	1	4.2
Statutory Board	-	1	-	1	4.2
TOTAL				24	100%

TABLE B.7  
Shareholding      Q.9

	Company Size			Total	
	Small	Medium	Large	n	%
Owned whole N.Z.	9	6	4	19	86.4
Owned whole outside N.Z.	-	2	1	3	13.6
				22	100%
Control Family	6	1	1	8	44.4
Control Non Family	3	3	4	10	55.6
				18	100%
Large number shareholders	1	5	6	12	57.1
Small number shareholders	6	3	-	9	42.9
				21	100%

TABLE B.8  
Company Objectives

	Company Size			Total
	Small	Medium	Large	n
Set for one year ahead	7	6	6	19
Set for long period	2	7	3	12

Of the 22 companies who responded to this question 86.4 per cent said their company set objectives for one year periods. 54.5 per cent said their company set objectives for a longer period, to five years.

TABLE B.9  
Basic Product Types      Q.12

	Company Size			Total	
	Small	Medium	Large	n	%
Beverage	-	1	-	1	4.2
Condiment	1	1	-	2	8.3
Canned Foods	1	2	1	4	16.6
Fish	1	-	-	1	4.2
Meat	-	-	3	3	12.5
Chicken	1	-	-	1	4.2
Fruit	3	1	-	4	16.6
Dry Goods	-	1	1	2	8.3
Cakes	1	-	1	2	8.3
Cereals	1	1	-	2	8.3
Essences	-	1	-	1	4.2
Frozen Foods	1	-	-	1	4.2
TOTAL				24	100 %

TABLE B.10  
Description of Product by Production Processes      Q.13

	Company Size			Total	
	Small	Medium	Large	n	%
Bottled	3	3	3	9	17.3
Canned	4	4	3	11	21.1
Frozen	3	1	6	10	19.2
Baked	1	2	2	5	9.6
Dried	2	5	2	9	17.3
Chilled	-	-	2	2	3.8
Fresh	2	1	3	6	11.5
TOTAL				52 <sup>(1)</sup>	100 %

(1) Respondents could select more than one response.  
Percentages represent all responding companies.

TABLE B.11  
Description of Product by Raw Material      Q.13

	Company Size			Total	
	Small	Medium	Large	n	%
Meat	1	2	5	8	17.0
Fish	1	1	2	4	8.5
Cereals	3	3	1	7	14.9
Vegetables	1	2	3	6	12.8
Fruit	2	3	2	7	14.9
Drinks	3	4	1	8	17.0
Dairy	-	1	-	1	2.1
Other	4	1	-	5	10.6
TOTAL				47 <sup>(1)</sup>	100 %

(1) Respondents could select more than one response.  
Percentages represent all responding companies.

TABLE B.12  
Who Buys the Main Product Lines?      Q.15

	Company Size			Total	
	Small	Medium	Large	n	%
Caterers	7	5	4	16	25.0
Institutions	5	6	5	16	25.0
Households	7	7	6	20	31.2
Other processors	6	3	3	12	18.8
TOTAL				64 <sup>(1)</sup>	100 %

(1) Respondents could indicate one or all alternatives.  
Percentages represent all responding companies.



TABLE B.13  
Major Market Areas for Main Product Lines      Q.16

	Company Size			Total	
	Small	Medium	Large	n	%
All New Zealand	7	8	4	19	79.2
Top of South Island <sup>(1)</sup>	1	-	-	1	4.2
All North Island, part South Island	1	-	1	2	8.3
All South Island, part North Island	1	-	-	1	4.2
Small parts of both islands	-	-	1	1	4.2
TOTAL				24	100%

(1) This was the only isolated sector of New Zealand identified

TABLE B.14

Market Share in N.Z. for FIRST Product Listed Q.17

Market Share	Company Size			Total	
	Small	Medium	Large	n	%
10 - 24%	3	1	-	4	23.5
25 - 50%	3	3	1	7	41.2
51 - 75%	2	2	1	5	29.4
> 75%	-	-	1	1	5.9
TOTAL				17 <sup>(1)</sup>	100 %

(1) Some firms refused to give this information

TABLE B.15

Strength of Competition for FIRST Product Listed Q.17

	Company Size			Total	
	Small	Medium	Large	n	%
Strong	3	4	2	9	60.0
Weak	2	3	1	6	40.0
None	-	-	-	-	-
TOTAL				15 <sup>(1)</sup>	100%

(1) Some firms refused to give this information

TABLE B.16

Market Share in N.Z. for SECOND Product Listed Q.17

Market Share	Company Size			Total	
	Small	Medium	Large	n	%
<10 %	-	-	2	2	16.7
10 - 24 %	-	2	-	2	16.7
25 - 50 %	1	1	-	2	16.7
51 - 75 %	1	1	-	2	16.7
>75 %	2	1	1	4	33.3
TOTAL				12 <sup>(1)</sup>	100 %

(1) Some firms refused to give this information

TABLE B.17

Strength of Competition for SECOND Product Listed Q.17

	Company Size			Total	
	Small	Medium	Large	n	%
Strong	2	2	2	6	54.5
Weak	2	2	1	5	45.4
None	-	-	-		
TOTAL				11 <sup>(1)</sup>	100 %

(1) Some firms refused to give this information

TABLE B.18

Description of Production Process Used for Export Products Q.18

	Company Size			Total	
	Small	Medium	Large	n	%
Bottled	2	3	1	6	16.7
Canned	2	4	3	9	25.0
Frozen	3	2	4	9	25.0
Dried	-	4	1	5	13.8
Chilled	1	-	2	3	8.3
Fresh	1	1	-	2	5.6
Other	-	1	1	2	5.6
TOTAL				36 <sup>(1)</sup>	100%

(1) More than one response was possible.  
Percentages represent all responding companies.

TABLE B.19

Description Raw Material Used in Export Product Q.18

	Company Size			Total	
	Small	Medium	Large	n	%
Meat	-	1	3	4	16.0
Fish	1	1	-	2	8.0
Cereals	1	2	-	3	12.0
Vegetables	-	2	-	2	8.0
Fruit	-	3	1	4	16.0
Drinks	3	4	-	7	28.0
Dairy	-	1	-	1	4.0
Other	1	-	1	2	8.0
TOTAL				25 <sup>(1)</sup>	100 %

(1) More than one response was possible.  
Percentages represent all responding companies.

TABLE B.20  
Longest Period of Time Exporting a Product      Q.19

	Company Size			Total	
	Small	Medium	Large	n	%
1 - 2 years	1	-	-	1	5.6
3 - 5 years	1	3	2	6	33.3
6 - 10 years	2	1	-	3	16.7
11 - 15 years	-	2	-	2	11.1
16 - 20 years	1	-	-	1	5.6
> 20 years	-	2	3	5	27.8
TOTAL				18 <sup>(1)</sup>	100 %

(1) 4 companies did not export; 2 did not give information.

TABLE B.21  
Shortest Period of Time Exporting a Product      Q.20

	Company Size			Total	
	Small	Medium	Large	n	%
< 3 months	3	-	1	4	33.3
3 - 6 months	1	1	-	2	16.7
7 - 12 months	-	3	2	5	41.7
> 2 years	-	-	1	1	8.3
TOTAL				12 <sup>(1)</sup>	100 %

(1) Some firms refused to give this information

TABLE B.22

Export Sales as Percentage of Total Manufacturing Sales Q.21

	Company Size			Total	
	Small	Medium	Large	n	%
< 5 %	3	4	2	9	45.0
5 - 10%	1	1	1	3	15.0
11 - 20%	-	1	-	1	5.0
21 - 30%	1	-	-	1	5.0
31 - 40%	1	-	2	3	15.0
41 - 50%	-	2	-	2	10.0
> 50 %	-	-	1	1	5.0
TOTAL				20 <sup>(1)</sup>	100 %

(1) 4 firms did not export

TABLE B.23

Evaluate Product Mix Q.22

	Company Size			Total	
	Small	Medium	Large	n	%
Yes	6	8	4	18	75.0
No	4	-	2	6	25.0
TOTAL				24	100 %

TABLE B.24

Evaluate Percentage of Sales/Product Mix Q.23

	Company Size			Total	
	Small	Medium	Large	n	%
Yes	6	8	4	18	75.0
No	4	-	1	5	20.8
Don't know	-	-	1	1	4.2
TOTAL				24	100 %

TABLE B.25

Plans Made to Add/Drop Products Q.24

	Company Size			Total	
	Small	Medium	Large	n	%
Yes	9	8	5	22	91.7
No	1	-	1	2	8.3
TOTAL				24	100 %

TABLE B.26  
Description of Company Product Policy      Q.25

	Company Size			Total	
	Small	Medium	Large	n	%
Usually innovators	6	6	1	13	56.5
Adopt proven products	2	2	2	6	26.1
No need to change products	2	-	2	4	17.4
TOTAL				23	100 %



TABLE B.27

Respondent's Opinions on Company Policy Q.26

	Company Size									TOTAL					
	Small			Medium			Large								
	HIGH	MED	LOW	HIGH	MED	LOW	HIGH	MED	LOW						
	n	%		n	%		n	%		n	%				
As a company policy our company places x emphasis on marketing	6	4	-	6	2	-	2	2	2	14	58.3	8	33.3	2	8.3
Our company emphasises policies of creativity in product development to x degree	3	3	4	4	3	1	1	3	2	8	33.3	9	37.5	7	29.2
Technology has x influence on development of products in our company	3	5	1	4	4	0	4	-	2	11	47.8	9	39.1	3	13.0
Research and development has x emphasis in our company policy	3	4	2	2	4	2	1	4	1	6	26.1	12	52.2	5	21.7
The success of any one product depends to x degree on personnel who direct its development	7	1	0	3	3	2	3	3	0	13	59.1	7	31.8	2	9.1
Our company places x emphasis on systematic product development	1	6	2	5	1	2	1	3	2	7	30.2	10	43.5	6	26.1

The following Tables, B.28 to B.46, are the results of the attitude statements in Q.27 which reads:-

"Consider the following factors and assess, in your opinion, the degree to which they are important for successful product development in your company."

TABLE B.28

Good Relations in the Market Channels

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	5	4	1	10	43.5
Quite important	3	2	2	7	30.4
Important	-	-	3	3	13.0
Undecided	2	1	-	3	13.0
Unimportant	-	-	-	-	-
Quite unimportant	-	-	-	-	-
Not at all important	-	-	-	-	-
TOTAL				23	100%

TABLE B.29

Experienced Marketing Staff

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	6	3	2	11	45.8
Quite important	4	5	2	11	45.8
Important	-	-	1	1	4.2
Undecided	-	-	1	1	4.2
Unimportant	-	-	-	-	-
Quite unimportant	-	-	-	-	-
Not at all important	-	-	-	-	-
TOTAL				24	100 %

TABLE B.30

A Research and Development Section Within the Company

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	4	1	3	8	34.8
Quite important	2	2	3	7	30.4
Important	2	3	-	5	21.7
Undecided	-	1	-	1	4.3
Unimportant	-	1	-	1	4.3
Quite unimportant	-	-	-	-	-
Not at all important	1	-	-	1	4.3
TOTAL				23	100%

TABLE B.31

Employees Who Have Been Hired for Their Creativity

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	5	1	-	6	26.1
Quite important	1	2	1	4	17.4
Important	-	1	2	3	13.0
Undecided	-	2	2	4	17.4
Unimportant	1	2	-	3	13.0
Quite unimportant	-	-	1	1	4.3
Not at all important	2	-	-	2	8.7
TOTAL				24	100 %

TABLE B.32  
Good Economic Environment

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	1	1	-	2	8.7
Quite important	1	2	1	4	17.4
Important	2	4	2	8	34.8
Undecided	2	1	-	3	13.0
Unimportant	-	-	-	-	-
Quite unimportant	1	-	2	3	13.0
Not at all important	2	-	1	3	13.0
TOTAL				23	100%

TABLE B.33  
Government Assistance in Product Development

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	1	-	-	1	4.3
Quite important	1	1	-	2	8.7
Important	1	-	-	1	4.3
Undecided	1	3	2	6	26.1
Unimportant	-	2	-	2	8.7
Quite unimportant	-	-	3	3	13.0
Not at all important	5	2	1	8	34.8
TOTAL				23	100 %

TABLE B.34  
Shortage of Relevant Resources

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	4	-	-	4	18.2
Quite important	-	5	2	7	31.8
Important	1	-	1	2	9.1
Undecided	2	1	1	4	18.2
Unimportant	-	1	-	1	4.5
Quite unimportant	1	1	1	3	13.6
Not at all important	1	-	-	1	4.5
TOTAL				22	100 %

TABLE B.35  
Use of Continuous Market Research

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	-	2	1	3	30.0
Quite important	-	1	-	1	10.0
Important	-	2	-	2	20.0
Undecided	1	-	-	1	10.0
Unimportant	-	1	-	1	10.0
Quite unimportant	-	-	1	1	10.0
Not at all important	1	-	-	1	10.0
TOTAL				10 <sup>(1)</sup>	100 %

(1) This variable was inadvertently missed in one half of the companies interviewed

TABLE B.36  
A Strong Need in the Market Place

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	4	3	1	8	34.8
Quite important	2	3	4	9	39.1
Important	-	2	1	3	13.0
Undecided	2	-	-	2	8.7
Unimportant	1	-	-	1	4.3
Quite unimportant	-	-	-	-	-
Not at all important	-	-	-	-	-
TOTAL				23	100 %

TABLE B.37  
Constant Idea Generation

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	3	1	-	4	17.4
Quite important	4	5	4	13	56.5
Important	1	1	1	3	13.0
Undecided	-	-	-	-	-
Unimportant	-	1	-	1	4.3
Quite unimportant	1	-	1	2	8.7
Not at all important	-	-	-	-	-
TOTAL				23	100 %

TABLE B.38

Senior Management Support for New Product Development

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	7	4	2	13	56.5
Quite important	-	3	3	6	26.1
Important	1	1	1	3	13.0
Undecided	1	-	-	1	4.3
Unimportant	-	-	-	-	-
Quite important	-	-	-	-	-
Not at all important	-	-	-	-	-
TOTAL				23	100 %

TABLE B.39

Presence of a General Company Marketing Policy

	Company Size			Total	
	Small	Medium	Large	n	%
Very Important	4	3	1	8	33.3
Quite Important	2	4	4	10	41.7
Important	3	1	-	4	16.7
Undecided	1	-	-	1	4.2
Unimportant	-	-	1	1	4.2
Quite unimportant	-	-	-	-	-
Not at all important	-	-	-	-	-
TOTAL				24	100 %

TABLE B.40  
Availability of Finance

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	5	1	-	6	25.0
Quite important	1	3	4	8	33.3
Important	1	4	2	7	29.2
Undecided	-	-	-	-	-
Unimportant	-	-	-	-	-
Quite unimportant	2	-	-	2	8.3
Not at all important	1	-	-	1	4.2
TOTAL				24	100 %

TABLE B.41  
Long-term Planning by the Company

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	2	3	1	6	25.0
Quite important	3	4	2	9	37.5
Important	2	1	1	4	16.7
Undecided	-	-	1	1	4.2
Unimportant	2	-	-	2	8.3
Quite unimportant	-	-	1	1	4.2
Not at all important	1	-	-	1	4.2
TOTAL				24	100 %



TABLE B.42  
Heavy Product Promotion

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	1	3	1	5	20.8
Quite important	3	3	-	6	25.0
Important	1	2	2	5	20.8
Undecided	3	-	1	4	16.7
Unimportant	-	-	-	-	-
Quite unimportant	2	-	2	4	16.7
Not at all important	-	-	-	-	-
TOTAL				24	100 %

TABLE B.43  
Personality of the Product Manager

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	3	-	-	3	13.6
Quite important	3	5	2	10	45.5
Important	2	3	-	5	22.7
Undecided	-	-	1	1	4.5
Unimportant	-	-	2	2	9.1
Quite unimportant	-	-	1	1	4.5
Not at all important	-	-	-	-	-
TOTAL				22	100 %

TABLE B.44

A Sound Technical Knowledge by the Product Manager

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	4	2	-	6	26.1
Quite important	3	3	4	10	43.5
Important	2	3	-	5	21.7
Undecided	-	-	1	1	4.3
Unimportant	-	-	-	-	-
Quite unimportant	-	-	1	1	4.3
Not at all important	-	-	-	-	-
TOTAL				23	100 %

TABLE B.45

A Unique Product (Not a Copy)

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	3	3	-	6	26.1
Quite important	2	3	1	6	26.1
Important	1	2	2	5	21.7
Undecided	1	-	-	1	4.3
Unimportant	1	-	2	3	13.0
Quite unimportant	1	-	1	2	8.7
Not at all important	-	-	-	-	-
TOTAL				23	100 %

TABLE B.46

Communication Between Technical and Marketing Employees

	Company Size			Total	
	Small	Medium	Large	n	%
Very important	7	1	2	10	45.5
Quite important	2	4	3	9	40.9
Important	1	1	-	2	9.1
Undecided	-	-	-	-	-
Unimportant	-	-	-	-	-
Quite unimportant	-	-	1	1	4.5
Not at all important	-	-	-	-	-
TOTAL				22	100 %

TABLE B.47

Have You Ever Experienced a Product Failure Q.30

	Company Size			Total	
	Small	Medium	Large	n	%
Yes	6	7	4	17	81.0
No	3	-	-	3	14.3
Don't know	-	-	1	1	4.8
TOTAL				21 <sup>(1)</sup>	100 %

(1) Three companies did not reply.

APPENDIX CDESCRIPTIONS OF COMPANY OPERATIONS

## Introduction:

These summaries are based upon information and facts as presented by the executive of the Company at the time of interview, May and August, 1978.

INDEX OF DESCRIPTIONS OF COMPANY OPERATION

	<u>Page</u>
C.1 Aulsebrooks Limited	120
C.2 Borthwick - CWS Limited	121
C.3 Boss Sauce Company Limited	122
C.4 Burwood Poultry Processors	123
C.5 Cerebos Foods (New Zealand) Limited	124
C.6 Donaghys Industries Limited, Food Division	125
C.7 T.J. Edmonds Limited	126
C.8 Emma Foods Limited	127
C.9 General Foods Corporation (N.Z.) Limited, Prepared Foods Division	128
C.10 Hansells (New Zealand) Limited	129
C.11 Haymarket Foods Division	130
C.12 Healtheries of New Zealand Limited	131
C.13 R. & W. Hellaby Limited	132
C.14 Independent Fisheries Limited	133
C.15 Taura Fruit Industries Co-op Limited	134
C.16 New Zealand Apple and Pear Marketing Board	135
C.17 New Zealand Flourmills Limited	136
C.18 Premi Foods (N.Z.) (1977) Limited	137
C.19 Quality Bakers of New Zealand Limited	138
C.20 Reckitt and Colman (N.Z.) Limited	139
C.21 Tasti Products Limited	140
C.22 Tauranga Fruit Processors Limited	141
C.23 Waitaki N.Z. Refrigerating Limited	142
C.24 J. Wattie Canneries Limited	143

C.1 AULSEBROOKS LIMITED  
(Christchurch)

Aulsebrooks was a New Zealand owned public company. It was one of three major firms in the biscuit market and one of four major firms in the confectionery market. The product function within the company was the responsibility of product managers, one for the biscuit section of the product mix and one for the confectionery section. Both reported to the marketing executive, the Marketing Manager. One of these product managers was aged 20-29 and prior to this position was product manager with another food firm. The other was aged 30-39 and one year prior to this position was Account Director for an advertising agency.

The company's domestic markets were in all parts of New Zealand and products were purchased by institutions, consumers and other processors. Exports of confectionery were estimated to be 2 per cent of total manufacturing sales whereas exports of biscuits were 7 per cent of total sales. The company set objectives for both the short term (one year or less) as well as for the longer term.

The company's product mix was confectionery, biscuits and snack foods. Products were sold under several different brand names. The market share for some products was generally felt to be as much as 50 per cent against strong market competition. The product mix was evaluated regularly but sales figures were not available for individual items in the product mix. It was felt that the company development policy was generally one of copying products and ideas which had been proven in other markets.

The product managers felt that the company placed high emphasis on marketing as well as on technology, and research and development. These were seen to be important to company policy and to the development of products. Policies of creativity and systematic product development were not emphasised in the company.

Factors felt to be of major importance to successful product development for this company included the identification of a consumer need, successful planning, production and consumer research, and competent research and development staff.

A product failure had been experienced and the major cause of the failure was felt to have been caused by insufficient planning and by the failure of the product to fill a consumer need.

C.2 BORTHWICK - CWS LIMITED  
(Wellington)

This large public company was a major subsidiary of Thos. Borthwick and Sons (A'Asia) Limited. Thos. Borthwicks was founded as a meat trading company in 1863 and meat still was the main product of the business at the time of interview. Over 20 per cent of the national export lamb production in New Zealand was from this company in 1978. Sales from export represented a large per cent of the total sales for this company.

The Product Development Manager had major responsibility for the products of the company. He reported to the Research and Development Manager. This division is separate from the marketing group which was in another city. The Product Development Manager was aged 20-29 years and had a Bachelor of Technology degree. He has been with this company for five years.

The company tried to set formal overall objectives for one year periods. The product mix was meat and smallgoods and the processes used in production included freezing and chilling and canning. Domestic market distribution of the company's products was to all parts of New Zealand through wholesalers and retailers. Products were purchased by caterers, institutions, consumers and by other processors.

It was felt that the company product policy was one of established products with no need to change them. The product mix was evaluated regularly by the company. Decisions were not made by this manager as to the addition or deletion of products from the product mix.

The Product Development Manager felt that the company placed low emphasis on marketing, on creativity and technology in product development and that research and development were of minimal importance to the company. The company did not emphasize systematic product development and this Manager felt that the success of any one product within Borthwicks was dependent to a fairly high degree on the personnel who directed its development.

Factors considered to be of importance to successful product development included an adequate marketing knowledge and a sound technological base within the company, good company inter-communications, and proper handling and presentation of the product in the market place.

Product failure had been experienced and the main cause was felt to have been the result of a lack of confidence in the size of the market segment to support the product.

C.3 BOSS SAUCE COMPANY LTD  
(Christchurch)

This family business was a manufacturer of bottled mint sauce and worcester sauce. The uncle of the current Managing Director started the business which had expanded to supply all of New Zealand. There were two other employees in the company and therefore the marketing function was carried by the Managing Director himself. He did not set objectives nor plan ahead in any formal or informal way. The manufacturing process involved buying fresh mint, making large quantities of sauce and bottling it. The Christchurch firm was the only storage depot and orders were obtained by agents. Usually stocks would last through the year but the company rarely ran a product "special" because of the danger of running out of stock in the off season.

The product mix consisted of two products with no variation in package size. The only diversification over the years had been three changes in bottle size and shape brought about by the container supplier. The manager believed his products had a large market share against strong competition. The company did not advertise its products and felt they had established products and had no need to change or diversify.

The Managing Director felt that the most important factor for product success was product quality, achieved through handling the product infrequently and letting machines do as much of the work as possible.



C.4 BURWOOD POULTRY PROCESSORS  
(Christchurch)

This private business had been run by the owner/operator for 20 years and was now felt to be running at capacity. The manager was 40-49 years old and held a Diploma in Business Management. He was the person in the firm who was responsible for the marketing function.

The product mix was dressed poultry including chicken, turkey, ducks, geese and some egg sales. The products were sold fresh or frozen. Distribution was to caterers, institutions, retailers and direct sale to consumers and was concentrated in three small areas of the South Island. The company did not export. The market share was felt to be about 50 per cent with weak competition in these market areas. The company did not evaluate its product mix regularly nor were sales broken down per product. The manager experimented with new lines or products; for example at the time of interview he was investigating the use of waste products from the company's operations for pet food. He felt however that the company had well established products and there was no need to change them.

The company manager set objectives for one year periods and he felt the success of any one product depended to a high degree on the personnel who directed its development.

Product price, packaging quality and service to the customer were felt to be the major factors for product development success in this firm. They did not consider that there had been a product failure in their operation.

C.5 CEREBOS FOODS (NEW ZEALAND) LIMITED  
(Auckland)

With 100 employees, this private company was classified for analysis as being of medium size. The Marketing Manager had responsibility for the marketing and product functions and he reported directly to the Managing Director. He was 20-29 years old and had been Marketing Manager for two years, previously being an Account Director for an advertising firm. The company research and development section reported directly to the Managing Director and included the functions of quality control.

The company set objectives for a one year period as well as planning formally for extended periods. The product mix included powdered beverages, gravy powders, pickles and sauces and several different brand names were used, including the company name and some from the overseas parent company. The manufacturing processes were pickling, bottling and dry mixing of cereals and beverages ingredients. Sales of the products were throughout New Zealand to caterers, institutions and retail outlets to consumers. The majority of main product lines held a market share of well over 25 per cent, mostly against weak competition. The company regularly evaluated its product mix according to sales and planned specifically for the addition or deletion of products from the mix. The Marketing Manager considered that the company were innovators in product development.

Salt had been an export product for 15 years and other products from the domestic product range were now exported. The amount of export in terms of total manufacturing sales was 1 per cent.

The Marketing Manager felt that the company placed a high emphasis on marketing in its company policy and also emphasized creativity and systematic product development.

Factors that were important to the firm's successful product development were uniqueness of product, an easily identified product benefit to the consumer, a defined consumer need, and sustained promotional impetus.

The company had experienced product failure and felt the main reason for particular failures was an inability to show a sufficient product benefit to consumers for them to shift brand loyalty.

C.6 DONAGHYS INDUSTRIES LIMITED  
FOOD DIVISION  
(Dunedin)

The food division of this public company operated as a separate small enterprise. The Division Manager had both marketing and product responsibility and worked closely with the production, finance and sales sections. The Manager was aged 20-29 years and had had previous experience in the overseas division of the company. He had a Masterate degree in Marketing.

The division tried to achieve overall objectives for a one year period but not for longer periods.

It was felt that the division placed heavy emphasis on marketing, whereas technology, and research and development had a lesser emphasis in the development of products. It was also felt that for this division the success of any one product depended to a low degree on the personnel who directed its development. Systematic product development was given heavy emphasis by the division.

Domestic distribution of the products was throughout all of New Zealand and caterers and households were purchasers of the products.

The product mix of the company was a process of canning meat and fish in the form of expensive pâté with development in frozen canned products. The canned fish products were exported and had been so for five years. The export sales represented 50 per cent of the total food sales. The products were all of one brand name (Lochland) and were gourmet food products. The products were felt to hold a fairly strong market share and competition in New Zealand was weak. The mix was evaluated regularly by sales according to each of the products and the Manager considered that the company product policy was one of innovation in product development.

Major factors important to successful product development for the division were seen to be market demand, uniqueness of product, high quality of product, planning for product development and finance.

Product failure had been experienced and the main cause was considered to be failure by the company to adjust market strategies to changing market conditions.

C.7 T.J. EDMONDS LIMITED  
(Christchurch)

This wholly owned New Zealand company celebrated 100 years of operation in 1979. T.J. Edmonds Limited was the largest of the companies of the Edmonds Group of Companies. There were 150 employees and the Advertising and Product Manager had the major responsibility for the product marketing function within the company. He reported directly to the General Manager and had held this position for seven years. Prior to becoming Advertising and Product Manager he was the South Island Sales Manager for the same company.

The product mix of the company in 1879 was one single product, 'Sure to Rise' baking powder, and had since expanded to include a self-rising flour, dry packaged mix desserts and drink products, condiments such as the beef stock, relish and other products from associated companies. The products were formulated and packaged within the company. There were various brand names for products, including the company name. The main product, baking powder, held a market share of greater than 75 per cent against weak competition. Other products had varied market share positions but usually were against strong market competition. The product mix was evaluated regularly and the percentage of sales for each product was known. The company felt their product policy was one of being innovators in product development. Objectives were set for the company for one year periods but not for longer terms.

Domestic market areas covered all of New Zealand and products were purchased by caterers, institutions and retailers. Export markets were important to the company as over 50 per cent of total manufacturing sales were from export. The major growth in this area had been achieved in the years since 1970.

The company placed heavy emphasis on marketing, technology, and creativity in product development and followed a pattern of systematic product development.

Factors considered to be important for this company's successful product development were a unique product, consumer acceptance, profitability to the company and a high content of ingredients from New Zealand.

A product failure had been experienced and the major reasons for a particular instance were seen to be a very high developmental cost and a product too advanced for the New Zealand market.

C.8 EMMA FOODS LIMITED  
(Christchurch)

Emma Foods was a subsidiary of Meadow Mushrooms (Christchurch). The company was incorporated in 1977 and was a New Zealand owned private company with three shareholders. The company was controlled by family members and had a total of 10 employees.

The firm's business was the processing of mushrooms with two product types at the time of interview, canned and dried. The product was distributed throughout all of New Zealand and was purchased by caterers, institutions, consumers and by other processors.

The General Manager had been with the company since its beginning. Prior to this time he held the position of Product Development Officer with another firm in the food industry. The General Manager had a degree of Bachelor of Technology and was aged 20-29. He was the person in the company most directly responsible for product development decisions.

The firm set objectives for one year periods. Generally the company placed heavy emphasis on marketing functions and also on creativity in product development. They evaluated the product mix regularly, made plans to add or drop products and they evaluated company sales according to the product mix. These areas of product development were decisions made by the General Manager himself after consultation with his directors. The General Manager considered that his company was usually an innovator in the development of products while technology and research and development had a moderate degree of influence on product development. Most of the research and development for new products was done by consultants and was not carried out in the company itself.

Emma Foods had not had an experience of product failure. Government assistance, both financial and for research and development was important to this firm. The General Manager felt that important factors for successful product development were effective consumer research to establish the need in the market place for the product and to have good idea generation and evaluation within the firm.

C.9 GENERAL FOODS CORPORATION (N.Z.) LTD  
PREPARED FOODS DIVISION  
(Auckland)

General Foods was a large public company and was one of the large subsidiaries of Watties Industries Ltd. The Marketing Manager had the responsibility for the product function although there was a Product Development Officer and Food Technologist on his staff. The current Marketing Manager had had experience in this same company as Product Manager. He had a Bachelor of Arts degree and was 20-29 years old.

The product mix for the company included pastry products and cakes and the production process was baking. The products were distributed in fresh or frozen form. There were two main brand names for these products; neither incorporated the company name. Domestic distribution of the products varied according to the product line; one line was distributed throughout all New Zealand, another to only the North Island and yet another to the more local Hamilton and Auckland area. Products were purchased by caterers, institutions and consumers. The product mix was evaluated regularly by a sales breakdown per product and it was considered that the company product policy was generally one of adopting proven products but in some areas they felt they were innovators. Products in overseas markets were being evaluated to assess their potential place in the New Zealand domestic market.

The company exported fresh and frozen bakery products. In 1978 this company increased its exports by 13 per cent as a result of concentrated effort in this direction, but the export percentage in terms of total manufacturing sales was not disclosed.

The company set objectives and plans for both the short term (one year or less) and the longer term. It was felt by the Marketing Manager that the company policy placed moderate emphasis on marketing, that technology had a low influence on product development and that research and development were given moderate emphasis in the company. The success of any one particular product was seen to depend heavily on the personnel who directed its development.

The main factors seen to be important for successful product development were committed senior management, a positive production attitude, clearly identified goals/objectives and a supply of new product ideas.

The company had experienced product failures due in some instances to the inability of the sales force to secure adequate product exposure.



C.10 HANSELLS (N.Z.) LTD  
(Masterton)

Hansells was a privately owned New Zealand industry, primarily controlled by one family. The firm employed 150 people.

The firm's product range was based mainly on flavour and involved dry mixing powders, flavourings, some vegetable, fruit, and dairy products using both bottling and dry packaging production processes. Beverage mix and concentrate were the most important products for this company. The products were distributed throughout all of New Zealand and were purchased primarily by institutions and consumers.

The product lines for Hansells were varied and did not all carry the same brand name. The estimate of the market share held by specific Hansells product lines varied widely from 10 per cent for some to greater than 75 per cent for others and for many product lines there was felt to be strong competition. They evaluated the product mix for each product regularly. The sales performance of individual products in the product mix was an important part of the evaluation.

The Assistant General Manager had export and marketing duties and was the executive most directly concerned with the management of products. With the exception of a planned product line of Weight Watcher foods there were no brand or product managers. There was a product development laboratory which played an important part in the technological testing of new products as well as quality control, while test marketing was carried out by consultants. The Managing Director considered that the company was an innovator in product development.

The Managing Director had been in this position for 25 years. Formerly he was General Manager of the same company. His age was between 50-59. Prior to the employment of the current Assistant General Manager, marketing and the development of the product lines had been his responsibility for some time. There had, at one time, been a marketing manager for the firm but when he left, he was not replaced.

Some product lines produced by Hansells were also exported. The Company had been exporting one line for fifteen years. Export represented approximately 2 per cent of total manufacturing sales for the company.

The company placed a high degree of emphasis on marketing, technology, and creativity in product development. In their experience, the success of any particular product was not likely to depend on the personality of the person directing its development and company policy did not emphasize research and development to a very large extent.

The Managing Director felt that two important factors for successful product development were exclusivity in the marketplace or a unique selling proposition and the packaging design given to a product.

Hansells had experienced at least one product failure. This was believed to have been due primarily to the fact that it was launched at the wrong time for the target market.

C.11 HAYMARKET FOODS DIVISION  
(Auckland)

This New Zealand owned public company was a subsidiary of the L.D. Nathan and Co. Ltd. Group. The Division Manager had the responsibility for the marketing and product functions and had the marketing sales and production personnel reporting to him. He was aged 40-49 and had had several years experience within the L.D. Nathan Group.

The company set overall objectives for both the short term and for 3-5 year periods. The product mix was dry grocery products and frozen convenience foods. Products used were meat, fish, cereals, vegetables and the processes included bottling, freezing, baking, milling and steam processing. There were three main brand names with one line using the company name of Haymarket. Distribution of the convenience food products was throughout all of New Zealand and the grocery items were mainly distributed in the North Island. Caterers, institutions, consumers and other processors all bought the company's products. Most of the main product lines held an estimated market share of below 50 per cent and nearly all products had strong competition in the marketplace. The product mix was regularly evaluated by sales breakdown for each product and it was felt that the company were innovators in product development, particularly in the convenience food area.

The company had exported bottled sauces and citrus peel for a period of up to three years with an export percentage of total manufacturing sales at 0.3 per cent.

It was felt by the Division Manager that the company policy placed a heavy emphasis on marketing. Both technology, and research and development were important to the development of company products. The company also placed heavy emphasis on systematic product development.

Factors of particular importance to successful product development for this company were felt to be a generation and screening of ideas preliminary to setting well defined objectives for the product, sound interpretation of market and consumer information, and the presence of a marketing strategy for the product introduction.

Product failures had been experienced and the main causes were a misjudgement of consumers' requirements and, in another instance, the product had been too difficult to produce.



C.12 HEALTHERIES OF NEW ZEALAND LIMITED  
(Auckland)

Healteries was a privately owned New Zealand food company. The Marketing Manager had responsibility for the marketing and product function; a technical section reported to him and ultimate responsibility rested with the Managing Director. Prior to becoming Managing Director of this company 10 years ago, he had been Product Development and Quality Control Manager for another firm and he had a technical and pharmaceutical qualification.

The product mix of the company was large and was basically one of cereals and vitamin food supplements including a pharmaceutical type of product line. The products were sold under three major brand names, including the company name.

Domestic distribution of the products was New Zealand wide to households; other processors also purchased the product lines. Exporting of some lines accounted for 10 per cent of the total sales. It was felt that technology, research and development were very important to the company and its product development. Marketing emphasis in company policy was not stressed. The success of any one product was believed to depend heavily on the personnel who directed its development. The healthfood product line held a market share position of up to 75 per cent. The product mix was evaluated regularly according to percentage of sales per product and plans were regularly made to add or delete products from the mix. The Managing Director felt that the company had a policy of generally adopting or copying products which had been proven in other markets. The company planned objectives for approximately one year periods but not long-term.

The major factors for successful product development were product profitability, increasing potential for production and sales, use of the quantity of base raw materials already available to the company, and a product which created an interest, both in production and with the consumer.

Product failure had been experienced due mainly to an inability to obtain raw material, too high a product price, and too small a market segment.

C.13 R. & W. HELLABY LIMITED  
(Auckland)

R. & W. Hellaby Limited, was a large public company, New Zealand owned. The Group General Manager had responsibility for the marketing and product functions and among several departments there was a separate section for export sales as well as a research and development section. The General Manager had had several years experience with this same company and was aged 40-49 years.

The company product mix was one of meat based products. In addition to fresh meat, Hellaby's manufacturing processes included bottling, canning, freezing and chilling meat products. The products were sold under several brand names, including the company name.

Domestic distribution of products was to nearly all of New Zealand with the exception of the far west coast of the South Island and the products were purchased by caterers, institutions, consumers and other processors. Exporting had been important to this company for 100 years and canned, frozen and chilled products were exported regularly to a variety of markets. Exporting accounted for approximately 40 per cent of total manufacturing sales. The market share held by the main product lines varied, with some holding more than 50 per cent of the market against strong competition and others holding a very small percent of the market. The product mix was evaluated regularly by percentage of sales and it was felt that the company generally waited to adopt or to copy proven products in other markets.

It was felt that the company policy placed moderate emphasis on marketing and that technology was of great influence to the development of products. Success of a particular product was seen to depend to a great extent on the personnel who directed its development. Creativity in product development was not given a heavy emphasis in company policy but the research and development laboratory was felt to be a creative section where new products were developed according to specifications set out by management. Senior management supported new product development in the laboratory by participating in regular taste-testing sessions.

The company General Manager set objectives for one year periods but not for the longer term. These objectives were for presentation to the Directors.

Factors felt to be of major importance for successful company product development were a systematic and professional product development process which included market research and development based on sound product costing.

C.14 INDEPENDENT FISHERIES LTD  
(Christchurch)

Independent Fisheries was a small New Zealand family business, incorporated in 1960. There were 45 employees at the Christchurch site. The Managing Director carried out the marketing function, had been with the company for a number of years and was over 60 years of age.

The product type was fish and the production processes used included canning, freezing, smoking and chilling. There were two main brand names and product diversification occurred within the production processes, for instance there were frozen fresh fish and fish fillets covered in batter and then frozen. The canned fish line was estimated to have a New Zealand market share of up to 24 per cent.

The products were distributed throughout all of New Zealand to wholesalers. The frozen, fresh and smoked lines were exported and this now represented approximately one third of the total sales for this business. Fresh fish had been exported since 1960 when the business began and a new export product had been introduced in 1978.

The company set a definite objective for any one year period but not for longer periods of time. There was no specific evaluation of sales according to each product. Decisions involving the management of products were the responsibility of the Managing Director in consultation with his staff. He felt that the success of any one particular product depended to a great extent on the personnel involved in its development.

The company placed a high emphasis in its policy on marketing and on creativity in product development. The company emphasized systematic product development but did not regularly evaluate the product lines after launch. The Managing Director considered that the company policy was an innovative one in the area of product development. Financial assistance from government as well as research and development assistance were felt to be important factors in product development for this company.

The Managing Director considered that two of the main factors for successful product development were a need for the product in the marketplace and extensive research and development carried out by the company.

C.15 TAURA FRUIT INDUSTRIES CO-OP LTD  
(Mt. Maunganui)

This company was a co-operative, operating in 1972 for the first time. It was a small company run by two General Managers and a Food Technologist. One of the General Managers had the responsibility for the marketing function.

The product type was fruit drink. The manufacturing process was one of bottling. Domestic product distribution was to the northern part of the North Island and the product was bought primarily by caterers and by other processors. The company did very little exporting. The fruit drink had an estimated market share of up to 24 per cent against weak competition.

The company set objectives for one year periods but not for long terms. The product mix was evaluated regularly according to the percentage of sales for each product. The General Manager felt the company had an innovative policy of product development.

It was the opinion of the General Manager that the company placed heavy emphasis on marketing, and research and development. The success of the company's products was said to depend to a great extent on the personnel who directed development. Also of importance were the careful assessment of the market opportunity and a consistent support of precisely-stated objectives.

C.16 NEW ZEALAND APPLE AND PEAR MARKETING BOARD  
(Wellington)

This organization was a statutory board operating under the Apple and Pear Marketing Act of 1971. The Marketing Manager had the main responsibility for the marketing and development of the product mix. There were sales, advertising and marketing services sections under his direct management. The Marketing Manager was aged 30-39 years and had had many years experience in this industry.

The product mix was fruit, apples and pears, and the processing was canned products. There were basically three brand names, one being "New Zealand". The fresh products held a New Zealand market share of approximately 50 per cent against strong competition. The canned products held a higher market share of up to 75 per cent against weak market competition. The product mix was evaluated regularly according to sales percentages for the mix. The company policy of product development was felt to be one of generally waiting to adopt proven products or ideas.

Domestic distribution for the products was to all of New Zealand and caterers, institutions and consumers purchased the products. The Board exported its products to a very large extent with export sales of fresh fruit amounting to 77 per cent of total sales in 1978.

The Marketing Manager felt that the Board policy placed heavy emphasis on marketing, and technology had a large influence on the development of products. Policies of creativity in product development and emphasis on research and development were less emphasized in policy. The Board did not place emphasis on systematic product development but the success of any one product was felt to depend to a great extent on the personnel who directed its development.

Factors that were felt to be of major importance to successful product development for the Board were uniqueness of product, good market research, adequate financial resources, sound technology, and a correct promotional path.

Product failure had been experienced by the Board and the major causes were believed to have been too long a time from initial research to launch, poor product packaging, promotion directed to the wrong market segment and inability to broach controls in another industry.

C.17 NEW ZEALAND FLOURMILLS LTD  
(Lower Hutt)

At the time of interview this company was still named A.S. Paterson & Co. Ltd., but was nearing the end of the reorganization period. The nature of the business had not changed however. The public company, with 800 employees, was a subsidiary of the Goodman Group Limited. The major product process was flourmilling and as such this company supplied many of the other companies in this group.

The Managing Director had the main responsibility for the marketing and product functions in this company although there was a group Marketing Manager position being created. Prior to becoming Managing Director this director held the position of General Manager and had been with the same company for a number of years.

The product mix was cereal based products and there were three major brand names for the pasta and flour products. One of these products held 51-75 per cent market share against weak competition. Other market share positions were varied. The company evaluated its product mix regularly according to sales per product and the Managing Director was involved in adding and deleting products from the line. He felt that the company product policy was one of innovation in product development. Distribution of the products was to all centres in New Zealand and products were purchased by caterers, institutions, consumers and other processors. The company exported 5 per cent of their total manufacturing sales. The company set objectives for both one year periods and for the longer term.

It was felt that the company placed only medium emphasis on marketing in its company policy and technology had only medium influence on the development of products within the company. Research and development had minimal emphasis in company policy and the company did not emphasize either creativity or systematic development in new products. The company was particularly interested in improving the quality of New Zealand flour and expended much effort in this activity.

Factors felt to be important for successful product development were knowing what the consumer needs, having the facilities to make what they want, pricing the product so that consumers can afford it, operating with sufficient population size in the market segment to make sales profitable and launching the product at the proper time.

The experiences of product failure were primarily due to the product's being too sophisticated for the New Zealand market at the time.



C.18 PREMI FOODS (N.Z.) (1977) LIMITED  
(Auckland)

Premi Foods Ltd., was a subsidiary of Rangitaiki Plains Dairy Company.

The Assistant General Manager had the responsibility for the marketing and product function and prior to holding this position he was Marketing Manager at another firm. He was aged 30-39 years. There was a Marketing Assistant, a sales and an export section reporting to this manager but product development was carried out in a Research and Development section of the parent company.

The product mix consisted of ice cream and frozen foods. Meat, fish and milk were the raw materials. Lines such as ice cream had their own brand name as did vegetables and the brand name of 'PREMI' included frozen desserts, cheese, frozen fish and meat. Market share held by various products was wide and varied but nearly all categories faced strong competition. The company policy was described as being innovative in product development and the product mix was evaluated regularly.

Domestic distribution of the products was to all parts of New Zealand and products were purchased by caterers, institutions, consumers and other processors. Exporting of some lines began 5 years previous to the time of interview and now 5 per cent of total manufacturing sales were from export.

The Manager felt that the company placed heavy emphasis on marketing and on creativity in product development. Technology had a heavy influence on the development of products in the company but there was not heavy emphasis on systematic product development. Success of any one product was felt to be heavily dependent on the personnel who directed its development.

Factors felt to be important for successful product development in this firm were consumer demand, utilization of current management and technical skills, the time and money to see the product to completion, and a clear decision path system for the development.

A product failure had been experienced and it was felt to have been due to too little being known about the consumers before the product launch.

C.19 QUALITY BAKERS OF NEW ZEALAND LTD  
(Palmerston North)

This firm was a co-operative of a number of individual bakeries in both the north and south islands. The Chief Executive, who was previously Managing Secretary of the same company, had the responsibility of the marketing and product functions. He was aged 40-49 and held a Diploma in Marketing.

The product mix was yeast raised bakery products which were sold under three main brand names and were distributed all over New Zealand, purchased by consumers and other processors. The market share for one product was felt to be up to 50 per cent. The product mix was not evaluated regularly nor was there a breakdown of product as to percentage of sales. However, plans were made by the company for adding new products and dropping others. The Chief Executive felt that the company generally adopted or copied products proven in other markets.

Frozen and chilled products were exported. Dough pieces had been exported for about 18 months and that was the longest period of time the company had been exporting. The percentage of export from the total manufacturing sales was minimal.

The company placed a high emphasis on technology in the development of products and it was felt that success of any product was related to a high degree to the personnel who directed the development. The company emphasis on marketing was felt to be minimal.

Factors that were seen to be particularly important to the company's successful product development were awareness of consumer requirements, sufficient motive for a retailer to stock the product, a unique product sales feature and availability of ingredients for production.

The company had experienced a product failure and the main cause of the failure was felt to have been diminishing quality of raw materials, a lack of production management support, and an incorrect assessment of the market needs.



C.20 RECKITT & COLMAN (N.Z.) LTD  
(Auckland)

This private company, incorporated in New Zealand in 1897, now employed approximately 400 people. The product mix was varied in that besides food products Reckitt & Colman manufactured houseware products, pharmaceuticals and toiletries. As a result of this variation the organisational structure included two Marketing Managers, one for pharmaceuticals and one for toiletries and housewares. There was also a Group Product Manager who had marketing responsibility for the food products. This manager had been with this company for 3 years and was 30-39 years of age.

The manufacturing processes involved mixing cereals, canning vegetables, fruits, and baking. The product mix was evaluated regularly according to sales for each product. The Product Manager described the product policy as being innovative in the field. Many products and brand names were the same as those used by overseas branches of the same company. In New Zealand many of the food products enjoyed a fairly large market share of the company, faced strong competition in most market segments.

The company set objectives for both the short term and long range plans. The company exported 14 per cent of its manufacturing sales and in the food sector this included canned asparagus which had been exported for five years.

Creativity in product development was heavily emphasized by the company but research and development was felt to be given only a moderate degree of influence by the company. The attitude and support of senior management and establishing a consumer demand for products were seen as the two most important factors for successful product development. New Zealand provided small market segments for some products and in the experience of this product manager, the segments were sometimes too small to support a new product.

C.21 TASTI PRODUCTS LIMITED  
(Auckland)

Tasti Products was a small private company incorporated in 1937. The Operations Manager had the main responsibility for the product functions of the company and reported to the General Marketing Manager. There was a technical section reporting to the Operations Manager. He had a Bachelor of Technology degree and prior to being with this company he was Food Technologist with another firm. He was aged 30-39 years.

The product mix consisted of fruit mix products, nuts, glace fruits and sauces and the major processing was syruping and dried packaging. There were two major brand names for the products. Most products held market share positions of 25-50 per cent or more with strong competition. Distribution of the products was throughout all of New Zealand and caterers, institutions, consumers and other processors purchased these products. The company evaluated its product mix regularly according to sales percentages for each product and it was intended that the company policies be one of innovation in product development.

The company planned objectives for both one year periods and for the longer term. Export of products accounted for 1 per cent of total manufactured sales.

The Operations Manager felt that company policy placed high emphasis on marketing and that research and development was of great importance to the development of products in the company. The success of any one product was related to a large degree to the personnel who directed its development. The company did not place heavy emphasis on systematic product development nor on policies of creativity.

Factors of importance to successful product development were strong and innovative marketing, good communication between technical and marketing personnel and strong management support.

C.22 TAURANGA FRUIT PROCESSORS, LTD  
(Tauranga)

This small family owned business employed 40 people. The person responsible for the marketing function was the Product Development Quality Control Supervisor who reported to the Technical Advisor of the company. The Supervisor had a Diploma in Dairy Technology and had been with this same company for at least 4 years. He was aged 30-39.

The company processed fruit products and fruit drinks using methods of bottling, canning and freezing. Several brand names were used, including two used only for export products. Domestic distribution of products was to caterers, institutions, consumers and other processors throughout various sections of both the North and South Islands. The company had been exporting products since 1969 and currently exports accounted for 25 per cent of total manufacturing sales. The Product Development Supervisor considered that the company were innovators in product development and the company evaluated their product mix regularly by percentage of sales per product.

It was the opinion of the Supervisor that the company placed a moderate emphasis on marketing, and on research and development. There was also a low emphasis on systematic product development within the company.

The following were considered to be major factors important to successful product development:-

- grid and spectrum analysis (rigid analysis of the developmental process).
- thorough product investigation.
- product formulation consistent with present equipment.
- a knowledge of the likely consumer response to the product.

In the past, a company product failure had been due to a lack of raw materials and an inadequate effort from the company in marketing the new product.

C.23 WAITAKI NEW ZEALAND REFRIGERATING LTD  
(Christchurch)

This large public company was New Zealand owned and had been operating since 1882. The company's product mix was primarily meat and meat by-products, although it did have textile, vegetable and fruit products. The company was primarily an export company and had been so since its origin. Exporting now represented 90 per cent of the total company sales.

The production function was the responsibility of the Research and Development Manager who reported directly to the Managing Director. There was also a Group Sales Manager but not a Marketing Manager position. The Research and Development Manager had been with the company for several years and held a PhD in organic chemistry. He was aged 30-39 years.

The company set overall objectives for both the short term (one year) and longer periods. The product mix was varied but the extensive range of meat products went under two main brand names. Distribution of products within New Zealand was localized to various city centres in both the North and South Islands. The company did not evaluate its product mix regularly nor did it show percentage of sales according to each item of the product mix.

The Research and Development Manager felt company product policy was one of having established products with no need to change them. Technology had a strong influence on the development of products within the company while marketing and creativity had a low emphasis in policy. The success of any particular product depended to a high degree on the personnel who directed its development. The company placed minimal emphasis on systematic product development.

Factors important to successful product development in this company included a rigid quality control of product specifications, the support of management, financial support, good marketing information and support of the product by the sales personnel.

C.24 J. WATTIE CANNERIES LTD  
(Hastings)

This large public company was wholly New Zealand owned and is a subsidiary of Wattie Industries Limited. The Divisional Marketing Manager had the major responsibility for the marketing and development of the company's products. The company's Research and Development laboratory carried out the company's product development. The manager had several year's experience at this same company and was aged 40-49 years. There were sales sections and marketing assistants reporting to this manager including a promotional advertising section and a product section. Company planning was usually for one year periods with no specific long range planning.

The product mix included canned, bottled, frozen and dried products with raw materials being meat, fish, vegetables and fruit. There were several brand names including the wide use of the company name. Domestic distribution of products was throughout all of New Zealand and caterers, institutions, households and other processors purchased the company products. The majority of product lines held a market share of greater than 78 per cent against weak competition. The product mix was evaluated regularly according to sales for each product and it was felt the company policy was one of usually waiting to adopt or copy products proven in other markets. Exporting of products accounted for approximately 10 per cent of total manufacturing sales.

It was felt that the company policy placed a heavy emphasis on marketing and technology had a high degree of influence in product development. The success of any particular product was not felt to depend to a great degree on the personnel who directed the development. Company policy emphasis on research and development was not heavy.

Factors of major importance to successful product development included a strong need in the market place, a research and development section within the company and senior management support for new product development.

BIBLIOGRAPHY

# BIBLIOGRAPHY

## BOOKS

- Aaker, D.A., ed., Multivariate Analysis in Marketing: Theory and Application, Wadsworth Publishing Co., California, 1971.
- American Management Association, Establishing a New Product Program, AMA, Management Report Series, No. 8, New York, 1958.
- \_\_\_\_\_, Developing a Product Strategy, AMA, Management Report Series, No. 39, New York, 1959.
- \_\_\_\_\_, New Products - New Profits, E. Marting, ed., New York, 1964.
- Anderson, N.G., From Concept to Production: A Management Approach, Taylor & Francis Ltd., London, 1975.
- Andrews, B., Creative Product Development, Longman Group Ltd., New York, 1975.
- Ansoff, I.H., Corporate Strategy, McGraw-Hill, New York, 1965.
- \_\_\_\_\_, ed., Business Strategy, Penguin Books, Middlesex, England, 1969.
- Baker, M.J., Marketing, 2nd edn., Macmillan Press Ltd., London, 1974.
- \_\_\_\_\_, Marketing New Industrial Products, Macmillan Press Ltd., London, 1975.
- \_\_\_\_\_, and McTavish, R., Product Policy and Management, Macmillan Press, London, 1976.
- Berg, S., Mismarketing: Case Histories of Marketing Misfires, Doubleday & Co., New York, 1970.
- \_\_\_\_\_, ed., Product Strategy & Management, Holt, Rhinhart & Winston, New York, 1963.
- Berridge, A.E., Product Innovation and Development, London, Business Books, 1977.
- Bither, S.W., Personality as a Factor in Management Team Decision Making, Pennsylvania State University, Pennsylvania, 1971.
- Booz.Allen and Hamilton, Management of New Products, 4th edn., New York, 1964.
- Borden, N.H., Jr., Acceptance of New Food Products by Supermarkets, Harvard University, Boston, 1968.
- Boyd, H.W. and Massy, W.F., Marketing Management, Harcourt Brace Jovanovich Inc., New York, 1972.
- Brion, J.M., Corporate Marketing Planning, John Wiley & Sons, Inc., New York, 1967.
- Britt, S.H., Marketing Manager's Handbook, Dartnell Corp., New York, 1973.

- Buck, C.H., Problems of Product Design and Development, Pergamon Press, Oxford, 1963.
- Burns, T. and Stalker, C.M., The Management of Innovation, Tavistock Publications, London, 1961.
- Buzzell, D. and Nourse, E.M., Product Innovation in Food Processing, 1954-1964, Harvard University, Boston, 1967.
- Collinson, H.A., Management for Research and Development, Sir Isaac Pitman & Sons Ltd., London, 1964.
- Converse, P.D., Huges, H.W., and Mitchell, R.V., Elements of Marketing, Englewood Cliffs, N.J., 1965.
- Cooley, W.W. and Lohnes, P.R., Multivariate Data Analysis, John Wiley & Sons, Inc., New York, 1971.
- Darrah, L.B., Food Marketing, Ronald Press Company, New York, 1967.
- Davidson, J.H., Offensive Marketing or How to Make Your Competitors Followers, Cassell & Co., London, 1972.
- Davis, H.L. and Silk, A., Behavioral and Management Science in Marketing, Wiley-Interscience, New York, 1978.
- Davis, J. and Hulett, J.R., An Analysis of Market Failure: Externalities, Public Goods and Mixed Goods, University Press, Florida, 1977.
- Department of Statistics, Monthly Abstract of Statistics, Wellington, New Zealand, July, 1979.
- Derosier, N.W. and Desrosier, J.N., Economics of New Food Product Development, AVI Publishing Co., Westport, Conn., 1971.
- Dominguez, S., Marketing in a Regulated Environment, Wiley-Interscience, New York, 1978.
- Douglas, A.G., Systematic New Product Development: A Systematic Approach to Diversification, Halstead Press, London, 1978.
- Evans, G.H., The Product Manager's Job, AMA Research Study, No. 69, American Management Association, New York, 1964.
- Fitzroy, P.T., Analytical Methods for Marketing Management, McGraw-Hill, New York, 1976.
- Foster, D.W., Planning for Products and Markets, Longman, London, 1972.
- Francis, P.H., Principles of R & D Management, AMACOM, New York, 1977.
- Frank, R.E. and Green, P.E., Quantitative Methods in Marketing, Prentice-Hall, Inc., Englewood Cliffs, N.J., 1967.
- Gee, E.A. and Tyler, C., Managing Innovation, John Wiley & Sons, New York, 1976.
- Gerlach, J.T. and Wainwright, C.A., Successful Management of New Products, Hastings House, New York, 1968.
- Gorsuch, R.L., Factor Analysis, W.B. Saunders, Philadelphia, 1974.
- Green, P.E. and Tull, D.A., Research for Marketing Decisions, 3rd edn., Prentice-Hall Inc., Englewood Cliffs, N.J., 1975.
- Gruber, A., The Marketing Managers Guide to New Product Invention, American Management Assoc., New York, 1977.



- Hair, J.F., Jr., Anderson, R.E., Tatham, R.L., Grablovsky, B.J., Multivariate Data Analysis, Petroleum Publishing Co., Oklahoma, 1979.
- Hako, B., New Product Strategy, Beekman Publishers, Brooklyn Heights, New York, 1971.
- Hayhurst, R., Midgley, D.F. and Wills, G.S.C., eds., Creating and Marketing New Products, Crosby Lockwood Staples, London, 1973.
- Hines, G.H., ed., Business and New Zealand Society, Hicks Smith & Sons Ltd., Wellington, 1973.
- \_\_\_\_\_, Organisational Behaviour, Hicks Smith & Sons Ltd., Wellington, 1972.
- Hise, T., Product Service Strategy, Van Nos Reinhold, Scarborough, CA., 1977.
- Hisrich, R.D. and Peters, M.P., Marketing a New Product: Its Planning, Development, and Control, Benjamin/Cummings, California, 1978.
- Holt, K., Product Innovation Models and Methods, Butterworths Pub., Inc., Woburn, Ma., 1978.
- Hopkins, D.S., Business Strategies for Problem Products, Nat'l Industrial Conference Board, New York, 1977.
- \_\_\_\_\_, Options in New Product Organisation, Nat'l Industrial Conference Board, 1974.
- Jacoby, J., and Chestnut, R., Brand Loyalty: Measurement and Management, Wiley-Interscience, New York, 1978.
- Karger, D., and Murdich, R., New Product Venture Management, Gordon & Breach Science Publications Inc., New York, 1972.
- Keegan, J., and Mayer, C.S., Multinational Product Management Proceedings, American Marketing Assoc., New York, 1977.
- Kelley, E.J., Marketing Planning and Competitive Strategy, Prentice-Hall Foundations of Marketing Series, New Jersey, 1972.
- King, S.H.M., Developing New Brands, Pitman, London, 1973.
- Kleyngeld, H.P., Adoption of New Food Products, Tilberg University, The Netherlands, 1974.
- Kotler, P., Marketing Management, 2nd edn., Prentice-Hall Inc., Englewood Cliffs, N.J., 1972.
- \_\_\_\_\_, Marketing Management, 3rd edn., Prentice-Hall Inc., Englewood Cliffs, N.J., 1976.
- Kraushar, P.M., New Products and Diversifications, 2nd edn., Business Books Limited, London, 1977.
- Law, R., Wienberg, C., Doyle, P. and Simmonds, K., Product Management, Harper & Row Limited, London, 1974.
- Leroy, G., Multinational Product Strategy: Product Innovation and Diffusion, Praeger, New York, 1976.
- Levitt, T., The Marketing Mode, McGraw-Hill Book Co., New York, 1969.
- \_\_\_\_\_, Innovation in Marketing, McGraw-Hill Inc., New York, 1962.

- Lorsch, J.W., Product Innovation and Organisation, New York, 1965.
- \_\_\_\_\_, and Ferrell, O.C., Marketing Strategy and Plans, Prentice-Hall Inc., Englewood Cliffs, N.J., 1979.
- Luck, D.J., Product Policy and Strategy, Prentice-Hall Inc., Englewood Cliffs, N.J., 1972.
- McGuire, P.E., Evaluating New Product Proposals, Conference Board, New York, 1973.
- McGuire, R., ed., Managing Product Recalls, Conference Board, New York, 1974.
- McLaughlin, D.J. Jr., and Mallowe, C.A., Food Marketing and Distribution, Chainstore Publishing Corp., New York, 1971.
- McLoughlin, W.G., Fundamentals of Research Management, American Management Association Inc., New York, 1970.
- Marvin, P., Product Planning Simplified, American Management Association, New York, 1972.
- Medcalf, G., Marketing and the Brand Manager, Pergamon Press, London, 1967.
- Midgley, D.F., Innovation and New Product Marketing, Croom Helm, London, 1977.
- \_\_\_\_\_, Managing New Products, Cranfield Institute Press, Bradford, England, 1975.
- \_\_\_\_\_, and Christopher, M., Customers in Action, MCB Books, Bradford, England, 1975.
- \_\_\_\_\_, and Wills, G., European Insights in Marketing Management, MCB Books, Bradford, England, 1977.
- Moravian, T., The Research and Development Engineer as Manager, Holt, Rhinehart and Winston, New York, 1963.
- Morley, J., ed., Launching a New Product, Bus. Books, London, 1968.
- Mueller, R.K., The Innovation Ethic, American Management Assoc., New York, 1971.
- National Industrial Conference Board, The Product Manager System, Experiences in Marketing Management No. 8, New York, 1965.
- \_\_\_\_\_, Organisation for New Product Development, Experiences in Marketing Management No. 11, New York, 1966.
- Nie, N.H., Hull, C.H., Jenkins, J.G., Steinbrenner, K., Bent, D.H., Statistical Package for the Social Sciences, 2nd edn., McGraw-Hill Book Co., New York, 1975.
- Nord, O.C., Growth of a New Product, MIT Press, Cambridge, Mass., 1963.
- Nye, B.C. and Dorr, E.L., Product Planning, McGraw-Hill, New York, 1979.
- Nystrom, H., Creativity and Innovation, John Wiley & Sons, Chichester, 1979.
- Offord, R.H., Product Management in Action, Business Publications Limited, London, 1967.

- Overall, J.E. and Klett, C.J., Applied Multivariate Analysis, McGraw-Hill, New York, 1972.
- Pearce, E., Marketing of Higher Management, International Publication Service, New York, 1970.
- Pessimier, E.A., New Product Decisions, McGraw-Hill, New York, 1966.
- \_\_\_\_\_, Product Management: Strategy and Organisation, Wiley-Hamilton, Wiley, 1977.
- Peters, M.P. & Hisrich, R.D., Marketing A New Product: Its Planning, Development and Control, Benjamin/Cummings, Reading, England, 1978.
- Rimmer, J.O., ed., Marketing in New Zealand, Hicks Smith & Sons Ltd., Wellington, 1972.
- Robertson, A., The Lessons of Failure, Macdonald Technical and Scientific, London, 1974.
- Robertson, T.S., Innovative Behaviour and Communications, Holt, Rhinehart & Winston, New York, 1971.
- Rodger, L.W., Marketing in a Competitive Economy, Hutchinson, London, 1965.
- Rogers, E.M., Diffusion of Innovations, The Free Press, New York, 1962.
- Rothberg, R.P., Corporate Strategy and Product Innovation, The Free Press, New York, 1976.
- \_\_\_\_\_, and Mellot, D.W., New Product Planning, AMA Bibliography Series No. 26, New York, 1977.
- Scheuing, E.E., New Product Management, The Dryden Press, Illinois, 1974.
- Scruse, R.R., ed., New Products: Concepts, Development and Strategy, University of Michigan, Business Division Research, Ann Arbor, 1970.
- Skinner, R.N., Launching New Products in Competitive Markets, International Publications Services, New York, 1973.
- Spitz, E.A., ed., Product Planning, 2nd edn., Petrocelli-Charter, New York, 1977.
- Stewart, R., Contrasts in Management, McGraw-Hill, London, 1976.
- Stone, M., Product Planning, An Integrated Approach, Macmillan Press Ltd., London, 1976.
- Tull, D.S. and Hawkins, D.I., Marketing Research, Macmillan, New York, 1976.
- Twiss, B.C., Managing Technological Innovation, Longman Group Ltd., London, 1974.
- Uman, D.B., New Product Programs, American Management Assoc., New York, 1969.
- Ward, D.J., Measuring Directing and Controlling New Product Development, London, 1968.
- Ward, E.P., The Dynamics of Planning, Pergamon Press, Oxford, 1970.
- Wasson, C.P., Dynamic Competitive Strategy and Product Life Cycles, Austin Press, 1978.

- Watton, H.B., New Product Planning, Prentice-Hall, Englewood Cliffs, N.J., 1969.
- Watts, R., Reaching the Consumer, Business Books, London, 1970.
- White, P.A.F., Effective Management of Research and Development, Macmillan Press Limited, London, 1975.
- White, R., Consumer Product Development, Longman Group Ltd., London, 1973.
- Wills, G., Creating and Marketing New Products, Lockwood Staples, London, 1973.
- Winkler, J., Winkler on Marketing Planning, Cassell/Associated Business Programs, London, 1972.
- Wortman, M.S., Jr., and Sperling, J., Defining the Manager's Job, 2nd edn., AMACOM, New York, 1975.

PERIODICAL LITERATURE

- American Association of Cereal Chemists, "Coping with technical market, demographic changes requires careful product development work", Report from New Product Seminar, Food Product Development, 10, (June 1976), 51.
- Ames, B.C., "Dilemma of Product/Market Management", Harvard Business Review, 49, (March-April 1971), 66.
- \_\_\_\_\_, "Payoff for Product Management", Harvard Business Review, 41, (Nov/Dec, 1963), 141.
- Anonymous, "Coping with Technical, Market, Demographic Changes Requires Careful Product Development Work", Food Product Development, 10, (June 1976), 51.
- Ansoff, H.I. and Stewart, J.M., "Strategies for a Technology-based Business", Harvard Business Review, 45, (Nov-Dec, 1967), 71.
- Armitage, R.Q., "How to Plan Products", Management Today, (July, 1967), 92.
- Arndt, J., "Role of Product-Related Conversations in the Diffusion of a New Product", Journal of Marketing Research, 4, (August, 1967), 291.
- Assmus, G., "NEWPROD: The Design and Implementation of a New Product Model", Journal of Marketing, 39, (January 1975), 16.
- Atherton, R.M., "Centralisation Works Best when Managers' Jobs are Improved", Human Resource Management, (Summer 1977), 17.
- Becker, S.W. and Stafford, F., "Some Determinants of Organisation Success", Journal of Business, 40 (1967), 511.
- \_\_\_\_\_, and Whistler, T.L., "The Innovative Organisation: A Selective View of Current Theory and Research", Journal of Business, 40, (1967), 462.
- Berryman, W., "High Technology Kiwi Ingenuity Earns a Hearing", National Business Review, (Nov. 19, 1979), 8.
- \_\_\_\_\_, "U.S. Export Market Success Demands Greater Pre-development Research", National Business Review, (June 27, 1979), 25.
- Buell, V.P., "The Changing Role of the Product Manager in Consumer Goods Companies", Journal of Marketing, 39, (July, 1975), 3.
- Bridges, J.S., "Don't Believe It When They Tell You Marketing Is Only for the Big Companies", National Business Review Marketplace, No. 1, (1973), 37.
- Business Week, "The Brand Manager: No Longer King", Business Week, 2274-2286, (June 9, 1973), 58.
- \_\_\_\_\_, "New Products: The Push is on Marketing", Business Week, 2248-2260, (March 4, 1972), 72.
- Buzzell, R.D., Gale, B.T., Sultan, R.G.M., "Market Share, A Key to Profitability", Harvard Business Review, 53, (Jan-Feb 1975), 97.

- Cashman, K., "Success Demands Risk-taking and Investment in New Technology", National Business Review, (Oct. 24, 1979), 20.
- Carlson, K.O., "New Products - Problems or Opportunities?", Food Product Development, 11, (Sept. 1977), 34.
- Chakrabarti, A.K., "Co-ordinating Mechanisms Between R & D and Marketing", Food Product Development, 10, (Sept. 1976), 48.
- Chisnall, P.M., "Research for New Consumer Products", European Research, 7, No. 6, (Nov. 1979), 248.
- Clewett, R.M. and Stasch, S.F., "Shifting Role of the Product Manager", Harvard Business Review, 54, (Mar-April, 1976), 65.
- Cooper, A.C., "Small Companies Can Pioneer New Products", Harvard Business Review, 44, (Sept-Oct 1966), 163.
- Cooper, R.G., "The Dimensions of Industrial New Product Success and Failure", Journal of Marketing, 43, (Summer 1979), 93.
- Crawford, C.M., "Marketing Research and the New Product Failure Rate", Journal of Marketing, 41, (April 1977), 51.
- Crockett, J.G., "The Marketing Oriented Technical Product Development Program", Journal of Marketing, 26, (July 1962), 42.
- Davidson, J.H., "Why Most New Consumer Brands Fail", Harvard Business Review, 54, (Mar-April 1976), 117.
- Dennis, R.A., "Acceptance of Technology and Technologists by New Zealand Industry", Food Technology in New Zealand, 2, (June 1977), 11.
- Dhalla, N.K. and Yespeh, S., "Forget the Product Life Cycle Concept", Harvard Business Review, 54, (Jan-Feb, 1976), 102.
- Dietz, S., "Get More Out of Your Brand Management", Harvard Business Review, 51, (July 1973), 127.
- Dunn, M.J. and Harnden, B.M., "Integral of Marketing and R & D Personnel in the Product Innovation System", Journal of Academy Of Marketing Science, 3, No. 1, (Winter 1975), 20.
- Earle, M.D., "Importance of Food Technology", Food Technology in New Zealand, 3, (Sept. 1968), 21.
- \_\_\_\_\_, "Product Development and Marketing", Food Technology in New Zealand, 3, (Jan. 1968), 11.
- Fabian, G.S., "Pitfalls in Developing New Product Ideas and Concepts", Food Product Development, 10, (Nov. 1976), 36.
- Fox, H.W., "The Product Career Path - A Management Tool", Quarterly Review of Marketing, (Autumn 1976), 5.
- Gemmill, G.R. and Wilemon, D.L., "The Product Manager as an Influence Agent", Journal of Marketing, 36, (Jan. 1972), 26.
- Gilmore, F.F., "Formulating Strategy in Small Companies", Harvard Business Review, 49, (May-June 1971), 71.
- Globe, S., Levy, G.W., Schwartz, C.M., "Key Factors and Events in the Innovation Process", Research Management, 16, (July 1973), 8.



- Grant, I., "New Products: for Expansion Rather Than Survival's Sake in New Zealand", NBR Marketplace, No. 1, (1974), 2.
- \_\_\_\_\_, "Five New Zealanders Talk New Product Development", NBR Marketplace, No. 1, (1974), 9.
- Green, J., "How the Dairy Industry Got into Marketing", N.Z. Economist, (Oct 1977), 6.
- \_\_\_\_\_, "Why Jane Perry went back to U.K.", N.Z. Economist, (May 1978), 7.
- Groves, M.C., "Developing New Lines - Why and How", Food Technology in New Zealand, 12, (August, 1977), 29.
- Hanan, M., "Corporate Growth Through Venture Management", Harvard Business Review, 47, (Jan-Feb 1969), 43.
- Heller, R., "British Business Growth League 1970", Management Today, (June 1970), 106.
- Hise, R.T. and Kelly, J., "Product Management on Trial", Journal of Marketing, 42, (Oct. 1978), 28.
- Hlavacek, J.D., "Towards More Successful Venture Management", Journal of Marketing, 38, (Oct. 1974), 56.
- Jenkins, F., "The Culmination of Product Development and Market Research in Consumer Communications", Food Technology, 24, (April 1970), 364.
- Johnson, S.C. and Jones, C., "How to organise for new products", Harvard Business Review, 35, (May-June 1957), 49.
- King, D., "Development of a Product and a Process", Food Technology in New Zealand, 3, (Jan. 1968), 14.
- Kline, C.H., "The Strategy of Product Policy", Harvard Business Review, 33, (July, Aug. 1955), 91.
- Knight, K.E., "A Descriptive Model of the Intra-firm Innovation Process", Journal of Business, 40, (1967), 478.
- Lancaster, G. and White, M., "Diffusion and Adoption of Innovation: A Review", Quarterly Review of Marketing, (Spring 1976), 16.
- Laster, R., "Strengthening Technology's Role in Product Success with Better Communication at the Marketing/R & D Interface", Food Product Development, 10, (May 1976), 20.
- Lester, T., "Peter Drucker's Management", Management Today, (July 1974), 80.
- Levitt, T., "Exploit the Product Life Cycle", Harvard Business Review, 43, (Nov-Dec 1965), 81.
- \_\_\_\_\_, "New Markets, Think Before You Leap", Harvard Business Review, 47, (May-June 1969), 53.
- Lilico, D. and Burgess, J., "Product Developments for Exports", N.Z. Export Journal, (Dec. 1979), 15.
- Luck, D.J., "Interfaces of a Product Manager", Journal of Marketing, 33, (Oct. 1969), 32.
- \_\_\_\_\_, and Nowak, T., "Product Management-Vision Unfulfilled", Harvard Business Review, 43, (May-June 1965), 143.

- Margerison, C., "Mismanaging the Promoted Managers", Management Today, (December 1974), 84.
- McCartney, A.E., "The Development of a New Product", Food Technology in New Zealand, 5, (April 1970), 135.
- McCrae, B., "New Technology for the 1980s", N.Z. Export Journal, (Dec. 1979), 4.
- Mellon, M., "Wanted: A Scheme for a National Strategy to Market N.Z. Overseas", National Business Review, (September 19, 1979), 42.
- Mintzberg, H., "Planning on the Leftside and Managing on the Right", Harvard Business Review, 47, (July-Aug. 1969).
- Morein, J.A., "Shift from Brand to Product Line Marketing", Harvard Business Review, 53, (Sept-Oct. 1975), 56.
- Mrak, E.M., "The Food Technologist", Food Technology in New Zealand, (June 1969), 257.
- Muir, A., "How to Plan Products - Maximising the Mix", Management Today, (July, 1967), 96.
- Murphy, J.H., "New Products Need Special Management", Journal of Marketing, 26, (October 1962), 46.
- Myers, J.G., Greyser, S.A., and Massy, W.F., "The Effectiveness of Marketing's R & D for Marketing Management: An Assessment", Journal of Marketing, 43, (Jan. 1979), 17.
- Normile, M.R.E., "The State of New Product Market Research in the U.S. Compared with Europe", European Research, 7, no. 6, (Nov. 1979), 270.
- O'Brien, P.V., "Scheme Places Exports on Seven Band Schedule", National Business Review, (July 4, 1979), 12.
- O'Meara, J.R., Jr., "Selecting Profitable Products", Harvard Business Review, 39, (Jan-Feb. 1961), 83.
- Pearson, A.S., "How to Compare New Product Programs", 11, no. 3, Journal of Advertising Research, (June 1971), 3.
- Peterson, R.W., "Venture Management in a Large Company", Harvard Business Review, 45, (May-June 1967), 68.
- Probine, M.C., "Applying Technology to Boost Industry", N.Z. Economist, (Dec. 1977), 7.
- \_\_\_\_\_, "Development of 'in house' R & D in this Country", N.Z. Economist, (March 1977), 14.
- Roberts, E.B., "What Do We Really Know About Managing R & D?", Research Management, 16, (Nov. 1978), 6.
- Roberts, R.W., and Burke, J.E., "Six New Products - What Made Them Successful", Research Management, 16, (May 1974), 21.
- Robertson, G., "Graduate Technologists: Industry's Misunderstood Men in the Middle", Food Technology, 7, no. 11, (Nov. 1972), 11.
- Rogers, E.M., "New Product Adoption and Diffusion", Journal of Consumer Research, 2, (March 1976), 290.
- Rubenstein, A.H., Chakrabarti, A.K., O'Keefe, R.D., Sounder, W.E. and Young, H.C., "Factors Influencing Innovation Success at the Project Level", Research Management, 16, (May 1976), 15.



- Sainsbury, M., "Combined Research Major Key to U.S. Market", N.Z. Export Journal, (June 20, 1979), 17.
- Sapolsky, H.M., "Organisational Structure and Innovation", Journal of Business, 46, (1976), 497.
- Schoen, D.R., "Managing Technological Innovation", Harvard Business Review, 47, (May-June 1969), 160.
- Scott, J.K., "Opening Address" Third N.Z. Food Technology Conference, Food Technology in New Zealand, 1, (June 1966), 253.
- Scully, D.W., "How H.J. Heinz Used the Simulated Test Market in Product Development", Food Product Development, 11, (March, 1977), 30.
- Seitz, R.M., "State of New Product Market Research Around the World", European Research, 7, no. 6, (Nov. 1979), 264.
- Shepard, H.A., "Innovation - Resisting and Innovation - Producing Organisations", Journal of Business, 40, (1967), 470.
- Shostack, G.L., "Breaking Free from Product Marketing", Journal of Marketing, 41, (April 1977), 73.
- Sly, W.H., "What is Involved in the Management of R & D - A British Evaluation", Food Technology, 22, (Oct. 1968), 1243.
- Smythe, M., "Don't Call Me A Stylist", N.Z. Economist, (May 1978), 8.
- Struse, R.W., "Marketing and Researching Techniques Can Lead to New Product Failures", Food Product Development, 11, (Nov. 1977), 12.
- Stumpe, W.R., "What the Research Manager Should Know about New Product Psychology", Research Management, (March 1979), 13.
- Sullivan, D., "Economic, Personal Values, Demographic Shifts Will Limit Number of Successful New Products", Food Product Development, 10, (March 1976), 36.
- Tauber, E.M., "Reduce New Product Failures: Measure Needs as well as Purchase Interests", Journal of Marketing, 37, (July 1973), 61.
- \_\_\_\_\_, "Why Concept and Product Tests Fail to Predict New Product Results", Journal of Marketing, 39, (October 1975b), 69.
- Thackray, J., "The re-heating of Heinz", Management Today, (Dec. 1974), 58.
- Thomas, B., "The Characteristics of a Marketing Relationship", Quarterly Review of Marketing, (Autumn 1976), 17.
- Thomas, M. and Goodwin, J., "An Examination of the Management of the Research and Development - Marketing Interface in Several British Companies", Quarterly Review of Marketing, (Autumn 1976), 1.
- Topham, A., "Feedback from the Front Line", N.Z. Economist, (March 1979), 6.
- Venkatesh, S. and Wilemon, D.L., "Interpersonal Influence in Product Management", Journal of Marketing, 40, (October 1976), 33.
- Wasson, C.R., "What is 'New' about a New Product?", Journal of Marketing, 24, (July 1960), 52.
- Wilkinson, R., "If you can't Measure it, you can't Manage it", Better Business, (April 1979), 48.

- Wolff, M., "What do we really know about Managing R & D?", Research Management, (Nov. 1978), 6.
- Woodward, H.N., "Management Strategies for Small Companies", Harvard Business Review, 54, (Jan-Feb. 1976), 113.
- Young, H.C., "Effective Management of Research - Market Teams", Research Management, (March 1979), 7.
- Zarecor, W.D., "High Technology Product Planning", Harvard Business Review, 53, (Jan-Feb. 1975), 108.

PERSONAL INTERVIEWS

- Archer, Professor L.B., Ashridge Management College, Berkhamsted, December 1978.
- Bourgeois, Dr. J.C., School of Commerce, Carlton University, Ottawa, Canada, August 1978.
- Coburn, M., Manager, Complan Research Association Ltd., Ottawa, Canada, August 1978.
- Harrington, G.H., Marketing Manager - New Products, RHM Foods Limited, London, May 1979.
- Kraushar, P., Chairman, Kraushar Andrews & Eassie Limited, London, May 1979.
- Polianski, Dr. A.N., Economic Analysis, Department of Industry, Trade and Commerce, Ottawa, Canada, August 1978.
- Richardson, Dr. G., Department of Food Science, Utah State University, Logan, Utah, June 1978.
- Stewart, J.W.D., Marketing Division, and Strauss, N., Company Advertising Manager, Lever Bros. Ltd., London, May 1979.
- Todd, J., Product Manager, H.J. Heinz Co. Ltd., London, May 1979.

UNPUBLISHED MATERIAL

- Cleland, A.C. and Earle, M.D., "Energy Use in the Food Manufacturing Industry", New Zealand Energy Research and Development Committee, Auckland, (to be published), private communication.
- Datson, G.H., "Small Scale/High Value", Paper Presented to Workshop Small Scale/High Value, Department of Trade and Industry, Wellington, (20 September 1977).
- Datson, P.J., "Towards Comprehensive Development", A paper presented to Workshop Small Scale/High Value, Wellington, Department of Trade and Industry, Wellington, (20 September 1977).
- Devlin, M.H., Needs and Problems of Small Businesses - Some Research Findings, Occasional Paper No. 15, Faculty of Business, Massey University, New Zealand, (1977).
- \_\_\_\_\_, and LeHeron, R.B., Report to the Development Finance Corporation on Dimensions of New Zealand Small Business, Massey University, New Zealand, (1977).
- Donaldson, J.D.B., Cook, J.O., Earle, M.D., McLisky, N.H., Sinclair, C.E., The Market for New Zealand Processed Foods in North America and the E.E.C., Report of the Export Opportunity Team to Department of Trade and Industry, Wellington, New Zealand, (April-May 1979).
- Dover, P.A., "The Measurement of New Product Potential", Market Research Centre, Massey University, (November 1970).
- Earle, M.D., "Launching a New Product", From Management of New Products and Processes, Product Development Workshop, Massey University, (1970).
- \_\_\_\_\_, "The Place of Food Product Development in New Zealand", J.C. Andrews Address, New Zealand Food Technology Conference, (June 1979).
- \_\_\_\_\_, "Study Notes", Product Development Workshop, Department of Food Technology, Massey University, (1979).
- Gendall, P.J., The Use of Discriminant Analysis, Factor Analysis, and Non-Metric Multidimensional Scaling in Marketing Research, unpublished M.Sc. thesis, Newcastle-upon-Tyne, (1978).
- Gunnell, M.J., "Product Management: Its Application to New Zealand Companies", unpublished research paper, Massey University, (1976).
- Kotler, P., "Marketing Strategy in a Rapidly Changing World", Seminar Address, Sales and Marketing Executives International, Auckland, New Zealand, (July 1979); referenced by permission of the speaker, letter dated 15 January, 1980.
- Love, R.N., Report on Development Programmes for the Small Business Sector, Management, Education and Development Centre, Massey University, New Zealand, (1977).
- Probine, M.C., and Stuart, J.F., "Access to/use of technology", A paper presented to Workshop, Small Scale/High Value, Department of Trade and Industry, Wellington, (20 September 1977).