AN INVESTIGATION INTO THE DIMENSIONS UNDERLYING THE SUCCESS AND FAILURE OF NEW CONSUMER PRODUCTS IN SOUTH AFRICA

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INTRODUCTION

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1. INTRODUCTION

While companies in their initial stages may well produce only one product, most established companies produce a number of products. Reference can therefore be made to their product mixes which serve as their source of revenues and profits. The product mix must be carefully planned. Inherent in such planning is the monitoring of the mix to determine whether or not it strikes a good balance in terms of factors such as sales growth, sales stability and profitability. The product mix must be optimal vis-a-vis the opportunities and threats present in the external environment at any point in time. Since the latter changes over time, so too should the product mix change in order to maintain the required balance between the environment and the product mix, as well as the required balance in terms of sales growth, sales stability and profitability.

Since all the planning activities occurring within a company are intimately linked, consideration must be given to the planning function as a whole rather than devoting attention to the product mix planning on its own.

Kotler, in describing planning, states the following:

> "Planning is deciding in the present what to do in the future. It comprises both the determination of a desired future and the steps necessary to bring it about. It is the process whereby companies reconcile their resources with their objectives and opportunities".
> (1972:362)

As such, it is apparent that planning is a means of determining 'where the company is, where it wants to be and what it has to do to get there'.

Planning should be seen as a process rather than an activity as there are a number of kinds of planning activities, each of which follows on from the previous one. Figure 1.1 contains the planning activities which companies concern themselves with.

TYPE OF PLANNING	PRIME RESPONSIBILITY	OUTPUT	TOOLS
I. *Long-range planning*	Top management Planning department	Long-range objectives Growth plan Competitive plan	Forecasting Opportunity and threat analysis Differential-advantage analysis Simulation
II. *Annual planning*	Top management Planning department Middle management	Annual company goals Total budget Goals and budgets by territory Goals and budgets by product Departmental plans	Allocation theory Budgeting and quota procedures
III. *Product planning*	Marketing V. P. Product managers	Product goals Product strategy and tactics Product budget	Marketing-mix theory
IV. *Venture planning*	New-product department Acquisition department	New-product development plan Acquisition plan	Breakeven analysis Earnings-flow discounting theory Marketing-mix theory Risk analysis
V. *Activity planning*	Middle management Technical personnel	Project timetables	Critical path scheduling

FIGURE 1.1 COMPANY PLANNING ACTIVITIES (Kotler, 1972:364)

The following represents a short description of each of these types of planning.

(a) Long-range planning

Such planning affords the company the opportunity to establish the broad direction of its future efforts and operations over the long-term. The latter may range from approximately five to twenty years, depending on the nature of the environment in which the company is operating, as well as the nature of the products it produces.

As such, long-range planning results in a generalized master plan which determines

> "...where the company stands (diagnosis),where it is headed (prognosis), where it should go (objectives), how it should get there (strategy), what means it should use (tactics), and how it should measure its progress (control)".
>
> (Kotler, 1972:418)

(b) Annual Planning

Annual planning establishes specific goals and plans for the year (i.e. over the shorter term) in accordance with the long-term plan. It includes the establishment of current goals and a total budget as well as the allocation of the budget over company territories, products and departments.

(c) Product Planning

Such planning is undertaken to establish a long-range and a short-range plan for each product in the company's product mix. These plans must be in line with both the annual plan and the long-range plan, and must ensure that some contribution will be made by the product to the company's objectives as set in the previous planning activities.

(d) Venture Planning

In describing what venture planning is, Kotler states the following:

> "The rapidly changing environment and the intense competitive pressures require companies to spend part of their effort in venturing - that is, developing new products, entering new markets and acquiring new companies".
>
> (1972:397)

While some changes or developments in the external environment may work in favour of the existing product mix, others may work to its detriment.In the light of the current and the expected future environmental conditions, the marketer must therefore determine whether the existing product mix will meet the profit objectives (as laid out in the long-term plan and the annual plan).

The extent to which the profit potential of the existing product mix falls short of the profit objective is known as

the profit gap. Ventures planned by the venture planning activity, represent means of filling such a profit gap to enable the company to achieve its profit objectives.

(e) Activity Planning

The end result of the previous four planning activities is likely to consist of a number of activities which are required to be carried out over time, often by certain deadlines.

Activity planning represents an attempt to arrange the sequence, as well as the timing of these activities in the manner which will enable their earliest and most efficient completion.

All of the planning activities are intricately linked to each other, as was made apparent in the above discussion. The concern at this stage rests most heavily with venture planning since it is in this context that the process of new product development is relevant. While developing new products represents one way to fill the profit gap, it must be remembered that there are a number of other venture alternatives.

Before embarking on a discussion of these alternatives, it is however necessary to note that the profit gap may also be filled by low cost, low risk alternatives. These are related to the internal efficiencies of the company and include factors such as

the increasing of productivity and the decreasing of company costs. Ideally, a company should first exhaust these opportunities before looking to venture strategies as a means of filling the profit gap.

A spectrum of venture strategies is presented in Figure 1.2.

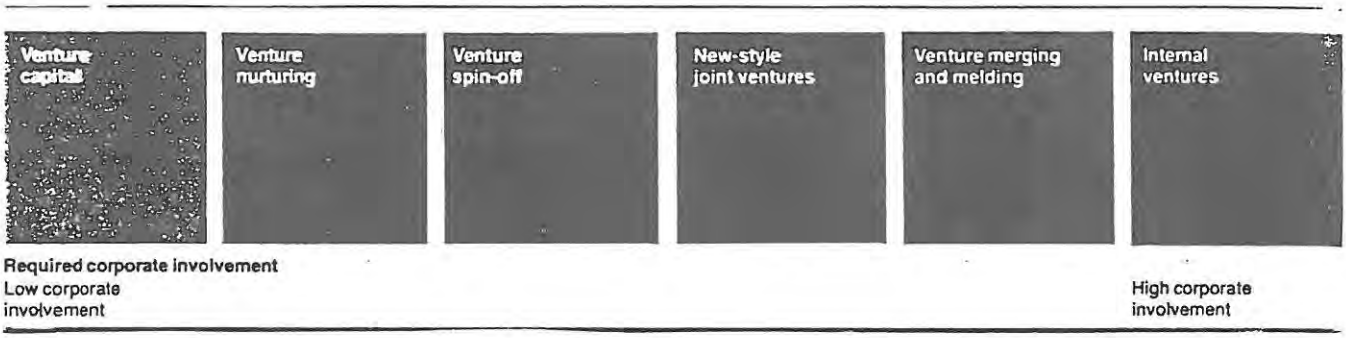

FIGURE 1.2 ROBERT'S SPECTRUM OF VENTURE STRATEGIES (Roberts, 1980:136)

A brief description of each of the venture strategies is presented below.

(a) Venture Capital

Such a venture has the lowest required corporate involvement. It refers to the investment of money in the stock of one company by another. While this low involvement approach is advantageous in that the investing company does not have to divert its attention and time from its current operations, Roberts does recognise the fact that the venture capital approach is seldom able to be an

important stimulus of corporate growth or profitability on its own. It was, however, used extensively during the mid- to late 1960's by major corporations which decided to secure entry into new technologies by taking investment positions in young high-technology enterprises.

(b) Venture Nurturing

This is similar to a venture capital strategy but the investing company provides not only capital investment but also managerial assistance which serves as a means of guarding the company's interests. As such, this approach has a slightly higher level of corporate involvement than the venture capital approach.

(c) Venture Spin-off

A company may develop an idea or technology which does not fit its mainstream interests. Should this occur, this strategy involves spinning off the new business as a separate concern. The rationale for doing this may be either to gain market and operational experience in a new field, or to attract outside growth capital.

(d) New-style Joint Ventures

With this strategy large and small companies enter jointly into new ventures. The small company provides entrepreneurial enthusiasm, vigor, flexibility and advanced technology while the large company provides capital and

worldwide channels of marketing, distribution and service.

(e) Venture Merging and Melding

This strategy involves the piecing together of all the types of venture strategies into a critical mass of marketing and technological strengths.

(f) Internal Ventures

When using this strategy the company sets up a separate entity within itself for the purpose of entering different markets or developing radically different products. This is clearly the new product development alternative and has the highest level of required corporate involvement. It is at this stage appropriate to briefly describe new product development.

Cunningham and Cunningham (1981:250) define new product development simply as "the process by which new products are introduced to the marketplace ...", while Udell and Laczniak (1981:233) define product development as "... the creation and adjustment of goods and services to satisfy customer demands.".

The latter rightly emphasizes the necessity of considering the consumer in new product development, as do van der Merwe and van der Merwe (1975) who state that new product development is basic to consumer orientated companies. It

does not, however, include the overriding dimension of profitability. Building on Udell and Laczniak's definition then, new product development may be described as being the process by which a company uses its assets or resources to create and adjust goods and services to satisfy the needs of consumers, thereby meeting profit objectives and satisfying stakeholders.

The fact is that the satisfaction of consumer needs (central to marketing as a whole as well as to new product development) is not an end in itself but rather, it is a means of making profits.

Roberts' spectrum unfortunately does not include the acquisition strategy which refers to one company acquiring another in order to promote the goals of growth, profitability and/or diversification. It may however by noted that acquisition requires a major upheaval and rearrangement of the company and as such can result in a number of serious problems. Douglas, Kemp and Cook (1978) in fact recommend that companies create new products from within their internal resources rather than risking the problems of acquisition.

The foregoing discussion has focussed on the different venture strategies which may be considered as means of filling the profit gaps. The financial or profit motive is the primary motive for the development of new products. Urban and Hauser in fact state

that "the perceived inability to achieve financial goals of profit and earnings per share can force initiation of new product development".(1980:3)

There are however a number of secondary motives which serve as reasons for developing new products, many of which are themselves intricately linked to the profit motive. The following section presents these secondary reasons for product development.

2. THE SECONDARY REASONS FOR THE DEVELOPMENT OF NEW PRODUCTS

2.1 SALES GROWTH

In many cases, a growth in sales is absolutely essential if profits are to be increased. This is so despite Urban and Hauser (1980) stating that the 1980's will be a time for profit maximization and risk maximization while the 1960's and 1970's were times for sales maximization. In other words, sales maximization cannot be divorced from profit maximization.

The firm may attempt to achieve sales growth through its current product offerings but this is unfortunately not always feasible or possible. Cunningham and Cunningham state the following:

> "Although the marketing department could possibly achieve annual sales growth objectives by selling more of what the firm currently produces, it is often necessary to gain new sales by introducing new products."
>
> (1981:251)

This may be necessary if, for example, the market for the current product offering is saturated and the company is not in a competitive position that enables it to draw sales from its competitors.

2.2 COMPETITIVE POSITION

The standing of an organisation relative to its competitors is a strong motivational force in the development of new products. Urban and Hauser state that "...in almost all organisations the presentation of any measure of an unfavourable competitive position provides a strong incentive for change". (1980:5)

If a company's competitor introduces a product which represents an improvement on existing products, for example, it is absolutely essential that the company introduces a product which is, at the very least, at parity with that new improved product if it is to survive in the long term.

2.3 THE STAGES OF THE COMPANY'S PRODUCTS ON THE PRODUCT LIFE CYCLE

The product life cycle concept proposes that all products ultimately reach decline and that new products need to be introduced to replace the obsolete products if the organisation is to maintain its profitability.

According to Douglas, Kemp and Cook, (1978) the notion that a

product has a limited life is especially true of fast-moving consumer goods, the latter being the concern of this research.

While the product life cycle has been met with much criticism, such as the difficulty in determining the stage of a product on the life cycle curve (Urban and Hauser,1980), it has been recognised that there is a tendency towards shorter product life cycles. Jolson in fact says that:

> "As industrial, trade and consumer purchasers become increasingly more receptive to progress and newness, a shortened product life cycle necessitates the firm's continuous active review of its market offerings with a view toward product additions, modifications and deletions."
>
> (1978:338)

Despite the controversial nature of the product life cycle concept, the lesson to be learnt is, however, that the rise of a product will inevitably be followed by its fall. Companies therefore have to plan for the obsolescence of their existing products by devoting attention to new product development.

2.4 TECHNOLOGY

Rapid changes in technology account for the decline of products and the shortening of life cycles. Such changes put pressure on companies to innovate or decline and those companies who can successfully create innovative products based on new technology have the potential to reap high profits.

Technological changes and breakthroughs then, serve as an impetus for new product development.

2.5 MATERIAL COSTS AND AVAILABILITY

In todays dynamic environment the availability and costs of raw materials fluctuate widely and such fluctuations often force the revision or elimination of products. One such example is the volatile fuel prices which, when high, force the manufacture of small, fuel-efficient cars as opposed to larger, luxury cars.

This motivating factor for new product development is recognised by Urban and Hauser who state the following:

> "...the development of new products to exploit the structural shifts in raw material prices will be important in many organisations."
>
> (1980:8)

2.6 CHANGES IN CONSUMER NEEDS

Jolson very clearly points out the fact that "neither market opportunity nor customer requirements are static notions".(1978:337)

The needs of customers change as a result of demographic shifts and life style changes within the market. In order to satisfy these emerging needs, and to exploit available opportunities, a company needs to develop new products. If a company is in a position to carry this out effectively, the financial rewards it

stands to gain may be considerable.

Sometimes the value of a potential new product to the consumer may be so great as to be sufficient enough for the consumer to actually request the production of the product without the company having to seek out the needs. Suppliers can in fact also be a force in this need recognition.

2.7 EXTENSION OF THE COMPANY'S EXISTING PRODUCT RANGE

Companies often need to add new products to their product lines in order to stimulate the sales of their existing products. Stapleton says:

> "The necessity to provide a new or revitalized product emanates from, (amongst other factors), an extension of an existing range to acquire fresh interests in the product, to maintain or extend one's share of the market or even to extend the whole market."
>
> (1974:110)

The need to extend one's product line, then, leads to the need for new product development.

2.8 EXCESS PRODUCTION CAPACITY

Whether production facilities are used at fifty percent capacity or one hundred percent capacity the organisation still incurs the same fixed expenses such as depreciation and insurance. If a company is producing at less than full capacity, it may then be

to its advantage to develop and produce potentially profitable new products. This represents a means of offsetting the fixed overhead expenses on the excess plant. It is in such a manner that excess production capacity serves as a stimulus for new product development.

All of the factors presented above are motivations for the development of new products. Urban and Hauser call for a preemptive strategy rather than a reactive strategy with regard to factors such as these:

> "To be effective in developing new products it is important to act in response to these factors, but to be more effective the manager should anticipate these factors and thus avoid a hurried short-run response."
>
> (1980:9)

This is becoming increasingly important especially in view of the fact that markets are becoming saturated with many product alternatives, consumer life styles continue to change, consumers are becoming more sophisticated buyers and the rate of technological change is increasing.

It may be noted that while the reason for developing a new product may stem from one of the above-mentioned factors on its own, more often than not is is a combination of these factors which serve as the stimulus.

Having considered the reasons for the development of new products

and hence the importance of new product development, attention will now be drawn to the alarmingly high failure rate of new products which are launched onto the market.

3. THE HIGH FAILURE RATE OF NEW PRODUCTS

In discussing the failure rate of new products it is necessary to look at both the actual failure rates and the causes of failure.

3.1 FAILURE RATES

Statistics as regards the failure rate of new products launched onto the South African market are unfortunately not available. This point has also been recognised by Carreno in his research thesis where he states that "...no study has been conducted in South Africa to estimate the failure rate of new products...".(1974:4)

It is for this reason that the failure rates to be presented will be based largely on studies conducted in America. The reported failure rates of new products vary greatly; Hisrich and Peters state that "the estimated rate of failure varies from ten percent to ninety percent depending on the reporting source.".(1978:13)

This is made apparent in the following reported rates of failure:

(a) A study of 366 new products conducted by Booz, Allen and Hamilton in 1971 indicated that one third of the products

introduced in the market were unsuccessful. (Urban and Hauser,1980)

(b) The failure rate of consumer products in the national introduction or major test markets is reported to be between fifty and sixty percent. (Urban and Hauser,1980)

(c) Douglas, Kemp and Cook say that "it has been widely quoted that eighty percent of new brands on the market fail...".(1978:26)

(d) A detailed study of new product failures in the packaged food field was made by Buzzell and Nourse. They found that out of 124 distinctly new products that reached a test market, thirty nine percent failed : twenty two percent in test market, eight percent after limited distribution, and nine percent after full distribution. (Pessemier,1977)

(e) Based on a study of the products introduced by two hundred leading packaged goods manufacturers, the Ross Federal Research Corporation reported a failure rate of eighty percent. (Kotler,1972)

The question of why the reported failure rates vary so greatly arises. Hisrich and Peters (1978) maintain that the disparity in findings arise from variations in three factors. These are as follows:

(a) The method used to define a new product

There are a number of categories of new products and the risks involved in each is different. Thus, if two researchers' definitions of new products for the purpose of their research differ in the respect of the categories included, they may well report different failure rates.

(b) The manner in which a failure was determined

There is no universal definition of product failure. As such, different definitions of failure may result in different failure rates being reported.

(c) The sample of the firms used in studies

The products of some companies may present a higher risk of failure than the products of other companies. Thus, the sample used in a study will influence the magnitude of the reported failure.

Kotler (1972) maintains that despite the discrepancies, the studies do all concur that a significant and probably substantial percentage of new products fail.

Since it has been found that a very high proportion of new products do fail, it is necessary to consider the possible causes of failure.

3.2 CAUSES OF FAILURE

According to Urban and Hauser (1980) very few systematic studies have been carried out to diagnose why products have failed. Nevertheless, a number of possible causes have been proposed by the literature. The following represent the major causes:

3.2.1 The selection of a market which is too small

Often a new product may attain a large market share but fail because the target market is not large enough to generate sales which are sufficient to earn satisfactory profits. It is therefore essential that companies ascertain whether a market is large enough to be viable before launching a new product to satisfy the needs within that market. In addition, the market size must be measured as objectively as possible, rather than being merely estimated on a subjective basis.

3.2.2 Lack of strategic fit with the company

Enthusiasm for a new product idea may lead a company into producing a product which does not match the unique skills of the company. New product ideas must therefore be evaluated in terms of their strategic fit with the company and the possible synergistic benefits which may be realized if the new product were to be produced.

3.2.3 Absence of product improvement or differentiation

The chances of success for new products which are only at parity with existing products are very small indeed. In fact, if a new product is not significantly different from existing products, it is most unlikely that the former will be able to capture market share from the latter.

Urban and Hauser maintain that "...the product should be both physically and perceptually better than existing products.".(1980:43) This emphasizes the fact that the difference in the new product must be able to be easily perceived by the consumer and should be greater than the just noticeable difference.

3.2.4 Limited distribution channel support

It is a recognised fact that distributors can 'make or break' new products. This is particularly true of fast moving consumer goods in South Africa as the power in the distribution channels is vested heavily in the large retailers. For example, it is believed that 80% of all grocery sales in South Africa occur through four major retailers.

Therefore, in developing a new product, it is of the utmost importance that the company determines not only the attitude of the distributors towards the new

product but also their willingness to place orders for that product. Companies which have healthy and established relationships with their distributors have a greater chance of securing their support than companies which experience much channel conflict, especially if the former have a favourable new product launch record.

3.2.5 Competitive response

The response of competitors to a company's new product launch is capable of rendering all the time, effort and expense of getting that product to the market as wasteful. It is for this reason that companies launching new products must forecast and anticipate their competitors potential responses and make contingency plans for their occurrences. They must furthermore attempt to make their new product so good that later competitive entries are only capable of being nothing more than parity products.

3.2.6 Changes in consumer tastes

In some markets consumer needs change very rapidly indeed. Thus, if new product development in such markets takes a long period of time, needs must be continually monitored so that the developing product may be redesigned, repositioned, dropped or delayed to

render it acceptable to the market when it is finally launched.

3.2.7 Changes in environmental constraints

Changes in government regulations, technology and the supply of materials can cause the failure of new products. For example, an unanticipated technological breakthrough by the innovator's competitor can cause a substantially improved product to be produced by that competitor. The result is that the new improved product launched by the competitor may well capture the market share previously enjoyed by the innovator.

While it is very difficult to forecast such external environmental changes, it is imperative that the company uses all the information they have at their disposal to place them in a better position to predict such occurrences.

3.2.8 Inappropriate organisation for new product development

Companies must consciously choose appropriate organisational structures for their new product development activities. Such organisational structures should be capable of facilitating the necessary communications amongst the various disciplines involved in the new product development process. If a company does not employ an appropriate new product development

organisational structure, the chances of success are greatly diminished. (Douglas, Kemp and Cook:1978) The importance of new product development organisational structures will be addressed in Chapter 2.

3.2.9 Neglecting new products

Since it is existing brands which are accountable for company profits in the short term, they are often given preference over developing products in terms of management time and effort. It is for this reason that it is suggested that a separate department or division be established to be responsible solely for the development of a new product.

3.2.10 Underestimating product costs

Although production costs are estimated as objectively as possible, very often the actual costs are found to be significantly higher. If the selling price is increased to absorb these increased costs, demand may suffer greatly. The company may therefore be forced to sell at the original selling price, thereby foregoing some of the anticipated profit.

In extreme cases, it may be found that the product can only be produced at a cost which is higher than the anticipated selling price. Should this occur, the new product development project may have to be abandoned

and the developmental costs forfeited.

3.2.11 Managerial behaviour

Foxall (1981) and Davidson (1976) recognise the fact that product failures may even be caused by the behaviour of management. Six enemies of marketing success in this regard are presented. Briefly, these are as follows:

(a) Unreal time pressures: This refers to self-imposed stress caused by the assumed need to enter the market and compete as quickly as possible. The result of this is that the product ends up being imitative rather than innovative.

(b) Inflexible objectives: If a predetermined number of brands have to be launched each year, managers may sacrifice quality in order to obtain quantity.

(c) Lack of courage: Internal company pressures to remain silent may sometimes be so great that a manager may lack the courage to admit openly that he feels a particular project has little chance of success.

(d) Vested interest: Those who propose the new product idea and those who have since invested

time in a new product become the products natural supporters. It becomes very difficult for them to withdraw the project, especially if they have spent much time and money on it. For example, Davidson says "few people will say, 'we've already wasted $250,000. Let's stop here'. A more likelier tack is, 'we've already spent $250,000. It'll be wasted if we stop now.'" (1976:121)

(e) Arrogance: Often a company assumes that consumers will purchase a new product merely because of a strong brand name. This is, in itself, rather myopic.

(f) Absorption in the process: It takes a tremendous amount of energy, planning and hard work to develop a new product. Those involved in product development may therefore be so immersed in the activities that they may overlook or not even recognise how small the chances of success are.

The results of an investigation into the causes of new product failure are presented in Table I.1.

TABLE I.1 THE NATIONAL INDUSTRIAL CONFERENCE BOARD'S FINDINGS ON NEW PRODUCT FAILURE

REASONS FOR NEW PRODUCT FAILURE	% OF OCCURRENCE
Inadequate market analysis	32
Product defects	23
Higher costs than anticipated	14
Poor timing	10
Inadequate marketing effort	13
Competitive reaction	8
	100

(Hisrich, et al., 1978:14)

An interesting point is that five of the six reasons, accounting for 90% of the occurrences, are marketing related.

In his evaluation of new product failure, Lin (1985) presents two classes of causes of new product failure. These are tangible causes on the one hand, and intangible causes on the other. A summary of these is presented in Figure 1.3.

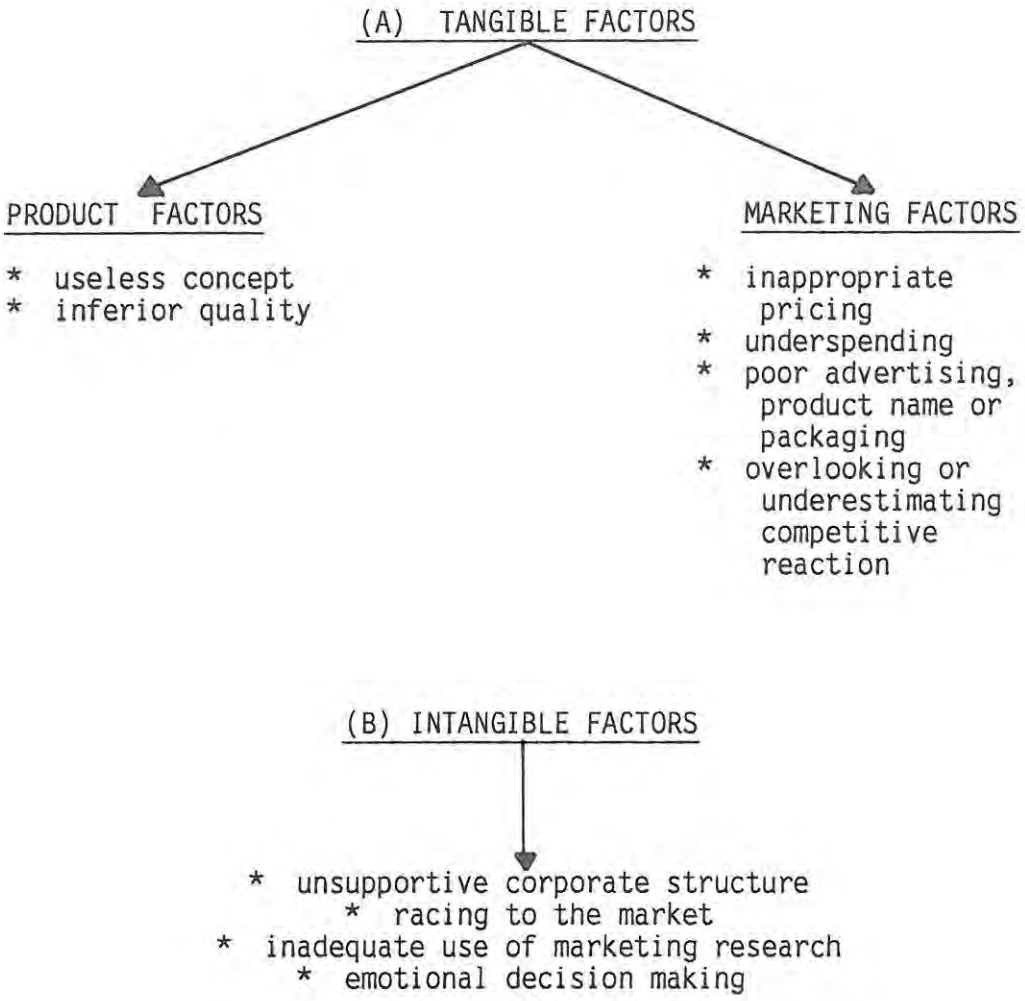

FIGURE 1.3 TANGIBLE AND INTANGIBLE CAUSES OF NEW PRODUCT FAILURE

While these above-mentioned factors have already been discussed , Lin makes the distinction between those factors of new product failure which are readily perceptible (tangible factors) and those which are inherent in the development process itself (tangible factors).

In this section on the failure of new products, attention has been given to both the high failure rate of new products and the

causes of new product failure. The question however arises as to why companies continue introducing new products when the majority of them may be failures. Pessemier rightly says:

> "The risk of product failure is high, but the risk of not introducing new products may be higher, especially in rapidly growing, evolving product categories."
>
> (1977:7)

Having considered both the necessity of new product development and the unfortunate high failure rate of new products, it now becomes appropriate to divert attention towards looking at what the researchers are doing to overcome this high failure rate.

4. THE CURRENT STATE OF NEW PRODUCT DEVELOPMENT RESEARCH

In looking at the current state of new product development research, attention will first briefly be devoted to the research approaches in this area. Thereafter, the research conducted by Cooper (1979) and Carreno (1979) will be discussed since it is these studies which are most pertinent to the current research.

4.1 THE RESEARCH APPROACHES IN THE FIELD OF NEW PRODUCT DEVELOPMENT

The approaches researchers have used in attempting to uncover the key for successful new product development have varied. Cooper (1979) presents four of these research approaches.

The first of these constituted an overview of the field and highlighted the problems faced by product developers. As such, it provided the groundwork and stimulus for further research. The Booz, Allen and Hamilton study of 1968 represents an example of a study adopting this approach.

The second approach concerned itself with an investigation of new product failures and included studies conducted by Cooper (1975), Davidson (1976), Hopkins and Baily (1971) and Laza (1965). The rationale for such an approach was the belief that an understanding of one's past deficiencies is the first step to a prescriptive solution.

The third approach was similar to the second but instead of concerning themselves with product failures, the researches probed case histories of successful products. Amongst those who played a role within this research approach are Cooper (1976), Globe, Levy and Schwartz (1973), Marquis (1969), Myers and Marquis (1969), and Roberts and Burke (1974).

It was hoped that by examining successful products' case histories, the key to successful new product development would be unveiled.

The fourth and final approach in product innovation is the most recent approach. Attention is devoted to comparing and contrasting new product successes with new product failures.

Participants involved in this approach include, amongst others, Rothwell (1972), Gerstenfeld (1976), Kulvik (1977), Rothwell (1974), Rothwell (1976), and Utterback (1976). Such research is based on the premise that only through a direct comparison of successes and failures will the variables that differentiated the two be identified.

Cooper (1979), in fact emphasizes the need for research adopting the fourth approach. He is of the opinion that empirical studies are needed to identify the major factors which differentiate between successful and unsuccssful new products. i.e. success/failure discriminators. While he recognizes the importance of such studies, he is, however, also aware of the difficulties involved in using this approach.

Firstly, there are methodological ailments which commonly plague any new research field. The most striking of these is the vagueness and inconsistency of operational definitions. This is made quite clear when one considers the difficulties inherent in defining, for example, a "new product success".

Other problems include small sample sizes being used, sample selection methods being suspect, naive data analysis techniques being used and finally, the fact that virtually all the research is set in a European context and conducted by nonmarketing people. The latter results in the variables under investigation being ones other than those which are of interest to marketing

people. Cooper's research, to be discussed further in this section, attempted to overcome many of these above-mentioned problems which have beset previous work.

4.2 RESEARCH WHICH IS OF RELEVANCE TO THIS STUDY

The research conducted by Cooper (1979) and Carreno (1979) are to be discussed. Both of these constitute work in the fourth and most significant research approach in new product development. The former was conducted in North America and the latter in South Africa.

4.2.1 Carreno's Research (1979)

Carreno's research is entitled "A study of some factors determining the performance of new products". His sample of 300 industrial and consumer goods manufacturers (selected from the BM Industrial Directory) yielded data on 84 products, 40 of which were successful and 44 of which were unsuccessful.

His objectives were to determine the general, specific and latent causes of new product failure and success, as well as to investigate variations in overall performance. In attempting to achieve these objectives, three models were used: the causal model, the product planning activities model and the analytical framework model. These formed the basis for

the structure of the research questionnaire.

Carreno's findings are summarized as follows:

* A greater marketing orientation is required in the process of new product development.
* Adverse conditions and decisions relating to marketing oriented factors play a dominant role in the failure of new products while successful products benefit from a fortunate combination of marketing factors.
* Successful products tend to be well funded and planned while unsuccessful new products tend to be plagued by a lack of marketing resources and poorly conducted marketing assessment and evaluative activities.
* Products which have a marketing type of relationship with their parent company tend to perform better than technology-related products.
* Implied marketing strategies of skimming and penetration tend to be uncorrelated to the intended market share objectives.

The importance of Carreno's research lies in the fact that it appears to be the first of its kind in a South African context. As such, it is hoped that it will stimulate further research into new product development

in South Africa.

4.2.2 Cooper's Research (1979)

Cooper's research represents an investigation into what separates successful from unsuccessful new industrial products, and hence the identification of the dimensions underlying success and failure. He selected a random sample of 177 firms and his eventual sample numbered 102 successes and 93 failures from 103 firms.

On the basis of his previous research, Cooper singled out six groups of variables that have an impact on new product outcomes. These were as follows: the commercial entity, the information acquired, the proficiency of process activities, the nature of the marketplace, the resource base of the firm and the nature of the project.

The total of 77 variables, expected to be related to new product outcomes, formed the basis of the questionnaire used by Cooper.

Cooper used both factor analysis and discriminant analysis in the analysis of his data. The former reduced the variables to 18 underlying factors while the latter determined the relationship between success or failure and these factors.

Eleven factors entered the discriminant solution and therefore differentiated between success and failure while the other seven factors were seen to have no impact on new product outcomes.

Of the eleven factors, three represented keys to success. These were as follows:

* product uniqueness and superiority,
* market knowledge and market proficiency, and
* technical and production synergy and proficiency.

A further three factors represented barriers to success. These were as follows:

* having a high-priced product, relative to competition (with no economic advantage to the customer),
* being in a dynamic market, and
* being in a competitive market where customers are already well satisfied.

Three factors were seen to be facilitators rather than keys to success since they were not as closely related to product outcomes as the previously mentioned factors. They were as follows:

* marketing and managerial synergy,

* strength of the marketing communications and launch effort, and
* the market need, growth and size.

It is interesting to note that all of these factors are marketing-related factors. Cooper regarded this as an indication of the importance of a market orientation in product innovation.

The final two factors which entered the discriminant solution were weakly-related to product outcomes. They were newness of the product to the firm and the source of the new product idea.

Finally, the seven factors which were found to have no impact on success are presented below:

* "first to market" factor,
* proficiency of the precommercialization activities,
* existence of a dominant competitor,
* proficiency of production start-up,
* product technical complexity and magnitude,
* product determinateness, and
* product customness.

While the foregoing two studies have influenced the current research, it is necessary to discuss the necessity of the current

research in the light of the former having already been conducted.

Carreno's research dealt with both industrial and consumer goods. It is, however, suspected that the requirements for successful new product development may be different for these two categories of products. One reason for such a suspicion is the fact that industrial goods are generally, by their nature, more technically complex than consumer goods. As such, technical proficiency may be of greater importance in the development of industrial products. This researcher is therefore of the opinion that it is necessary to study these two categories in isolation of one another rather than combining them in the same sample. It is felt that the latter may give rise to a bias in the results of a study in favour of the category which comprises the larger proportion of the sample.

The above does not represent an attempt to invalidate the results of Carreno's research; rather, Carreno's research is seen as a useful starting point for the stimulation of further research in each category of products.

Cooper's research forms the basis of the current research. While there are a number of differences which will become apparent in the methodology chapter of this thesis, there are two significant differences which may be presented at this stage. The first of these is the fact that Cooper studied industrial products, rather than consumer products and the second is the fact that Cooper's

study was conducted in Canada while this research was conducted in South Africa.

The latter is a most important point. Far too often the findings of research conducted in other countries are assumed to be applicable to the South African set of circumstances. The problem is, however, that South Africa is a unique country with very different characteristics from those of other countries. It is therefore myopic to assume the relevance of research conducted outside the boundaries of South Africa without testing it locally first. It is for this reason in particular that South Africa has a desperate need for more research.

Having identified the need for this research and having given consideration to the research which has influenced it, it now becomes appropriate to devote attention to the nature of the current research.

5. THE NATURE OF THIS RESEARCH

In considering the nature of this research, it is necessary to present the research problem and subproblems, as well as the delimitations of the problem and the definitions of terms.

5.1 THE RESEARCH PROBLEM

This study represents an investigation into the dimensions

underlying the success and failure of new consumer products in South Africa.

5.2 THE RESEARCH SUBPROBLEMS

There are two major subproblems related to the research problem. These are as follows:

(a) What factors serve as success/failure discriminators for consumer products launched onto the South African market?

(b) Is there any correlation between organisation size and new product development organisational structures employed?

5.3 THE DELIMITATIONS OF THE PROBLEM

The delimitations of the research problem are as follows:

(a) Field of Study

Quantitative Research - Empirical Testing

(b) Region

South Africa

(c) Economic Sector

Manufacturing Sector

(d) Industry

Consumer goods industry

(e) Enterprise

Sole proprietorships, partnerships and companies

(f) Management Level

Top management in the form of the Marketing Director or equivalent

5.4 DEFINITIONS OF TERMS

The following terms require definition in terms of this research:

(a) A successful new product shall, for the purposes of this study, mean a new product which has fulfilled company expectations.

(b) An unsuccessful new product shall, for the purposes of this study, mean a product which has not fulfilled company expectations.

(c) New consumer products shall, for the purposes of this study, mean products destined for the ultimate consumer which are significantly different from a company's current product offerings, including product replacements, product line extensions and product diversifications.

6. THE PROPOSED BENEFITS OF THIS RESEARCH

It is hoped that the findings of this research will have useful implications for both theory and practice.

From a theoretical point of view, this study will represent an evaluation of the new product development theory, which is largely American based, under South African conditions. It will furthermore give rise to suggestions for further research into new product development in South Africa.

From a practical point of view, on the other hand, it is ultimately hoped that this research will make a valuable contribution in reducing the high failure rate of new consumer products in South Africa. More specifically, the findings of this research should serve as an empirical base for the screening of new product ideas in the consumer goods industry in South Africa. This is so because the results will determine which type of products under which conditions are most likely to succeed.

With regard to the screening of new product ideas it may be noted that a variety of tools and techniques have been provided to assist in the screening. These include rating scale and checklist models. A severe limitation of these is however recognised by Cooper:

> "...neither the screening variables included nor their relative weightings, whether variable or fixed, have been empirically derived; they simply are based on subjective estimates."
>
> (1979:93)

The findings should furthermore have the potential for developing prescriptive guides for the new product process in the consumer

goods industry in South Africa.

Having laid the foundation of the purpose of this research, it now becomes appropriate to present an overview of the available literature on new product development. This will form the subject matter of the following two chapters.

CHAPTER TWO

ORGANIZING FOR NEW PRODUCT DEVELOPMENT

CONTENTS

1. INTRODUCTION

Effective organisational structure is a prerequisite for the implementation of strategies. Organisational structure is not an end in itself, but rather a means to facilitate the achievement of goals and to coordinate the activities required for the achievement of such goals. As such, the organisational structure employed in the implementation of the chosen strategy plays a role in determining the success or the failure of that strategy.

Khandwalla defines organisational structure as

> "...the set of durable and formally sanctioned relationships and arrangements designed to reduce internal and external uncertainty, permit the organisation to engage in a variety of tasks, and secure for it a high degree of coordination among these tasks so that it achieves its goal efficiently."
>
> (Wind, 1982:466)

In the same way that organisational structure is necessary for the implementation of strategies, it is also essential in the development of new products. Effective new product development organisational structure facilitates the achievement of new product development goals and coordinates the activities involved in the new product development program.

The literature emphasizes the need for consciously developing organisational structures to facilitate the new product development activities within an organisation. Amongst these are

McDaniel, who states the following: "to increase the chances of success, a sound new product development structure must be created within the company." (1982:258), and Wind, who maintains that successful new product development requires "...the design of an organisational structure and procedures which will enable the achievement of the new product objectives of the division, strategic business unit, and the corporation." (1982:464)

If new product development is to be seen as a means of filling the profit gap, the result would be nothing short of disasterous if it failed to achieve this. Without a formally constructed new product development structure, the company may well find itself in a situation where no new products are in fact being launched or where the responsibility for new product development rests heavily on a manager who simply does not have the time to cope with an additional work load. The latter is often the case when the product manager of existing products is solely responsible (i.e. without the help of a facilitating structure) for the development of new products. His commitment to current products and his solving of their daily problems does not leave him with sufficient time to devote to the most essential activities of new product development.

Furthermore, if a formal organisation for new product development is not established within a company, the responsibility for new product development may well not be assigned to anyone at all and no new product development activities will be conducted. If such

a situation arises, the company may be artificially constraining itself to low growth.

A further factor emphasizing the need for new product development structure is the fact that many functions within the organisation are required to participate in the developmental activities. Structure is therefore essential to ensure the effective communication and coordination amongst these functions. This is further emphasized by Urban and Hauser in their following statement:

> "Decision making within the ordered sequential analysis of the development process is best made within an organisational structure that effectively mobilizes the diverse resources from research and development, engineering, marketing, sales, production, finance and top management."
>
> (1980:531)

It should now be apparent that it is absolutely essential for a company to adopt a new product development structure to facilitate its developmental activities. While this is particularly essential for large companies, it may be noted that in smaller companies the new product development activities may be carried out solely by the owner or manager. In such cases there is little need for the complex organisation which is required in the larger companies.

The question of who should be responsible for new product development within a company arises. This will ultimately depend

on the type of organisational structure which is employed by the company for the purpose of product development. The literature does however make it quite clear as regards the role of top management and the chief executive officer: they simply must have the final authority in any decisions made about new products. Hisrich and Peters say,

> "The need to include top management in the final decision-making is quite clear; its function is to coordinate departmental interests and to improve the welfare of the total organisation."
>
> (1978:28)

Besides participating in the final decision-making, the chief executive officer must ensure that the new product development activities are in line with the company objectives. Cafarelli stresses this point in the following manner:

> "Just like manufacturing or marketing, it (new product development) requires thought and explicit direction by the chief executive officer, or it will continue to limp along, setting its own objectives (often not quite compatible with those of the firm), and often turning out products that, when they are ready to be marketed, may not be relevant to the firm."
>
> (1981:18)

It may thus be stated that while those involved with the day-to-day activities of new product development are actively involved, top management and the chief executive officer are more passively involved, but in an essential and critical way.

The identities of the actively involved persons will become

apparent when giving consideration to the different types of structures for new product development which forms the basis of the following section.

2. TYPES OF ORGANISATION FOR NEW PRODUCT DEVELOPMENT

Factors which are critical to the success of the new product development process have been identified by McDaniel (1982) as being freedom from bureaucratic constraints, an entrepreneurial atmosphere, input from all functional areas and extensive top management involvement and commitment. Thus, any organisational arrangements for new product development must accommodate and make possible these prerequisites for success.

The various internal organisational forms for new product development vary with respect to three major dimensions, namely

(a) time commitment i.e. whether the unit is solely involved in the new product development activities or not,
(b) permanency status i.e. whether the unit is permanent or temporary, and
(c) servicing level i.e. whether the unit serves the entire firm, a division or a product group.

(Wind,1982)

These three dimensions give rise to eight organisational forms which are represented in Figure 2.1.

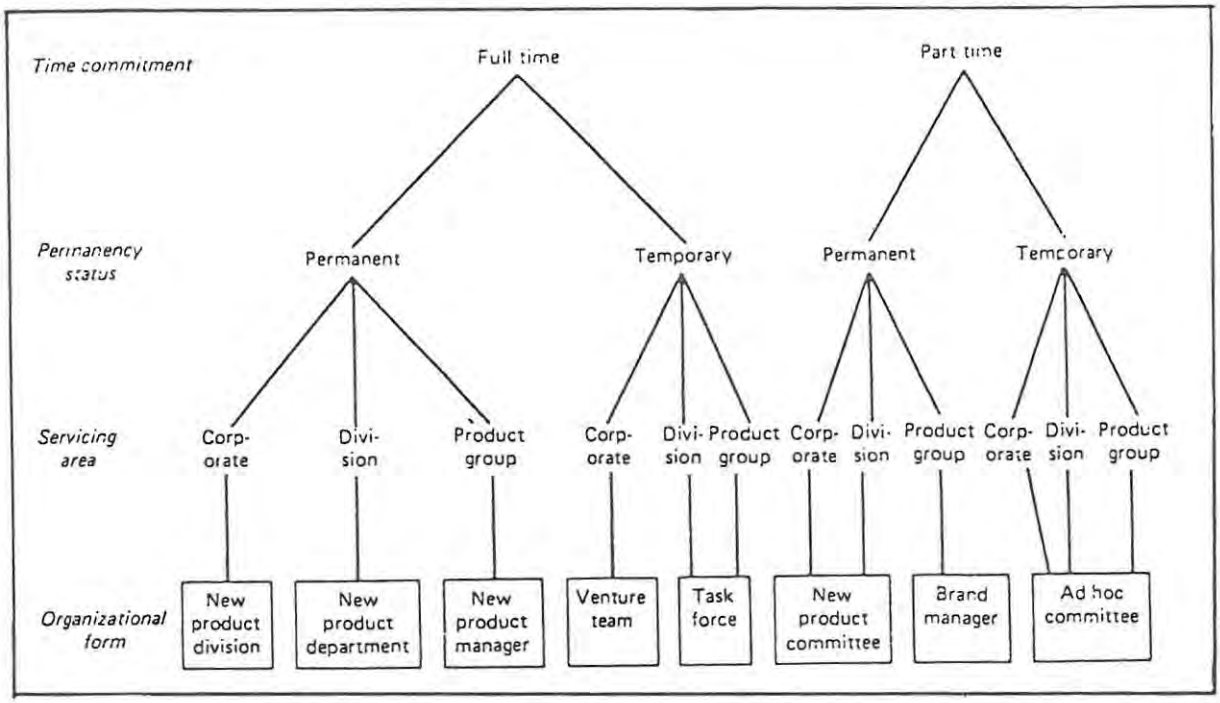

FIGURE 2.1 NEW PRODUCT DEVELOPMENT ORGANISATIONAL FORMS (Wind, 1982:487)

Since there is some overlap amongst these eight organisational forms, they may be reduced to five major forms, namely

(a) venture teams,

(b) task forces,

(c) new product departments/divisions,

(d) new product committees, and

(e) new product managers.

Each of these will now be discussed in turn.

2.1 VENTURE TEAM

A venture team is defined by McDaniel as being

> "...an entrepreneurial, market-oriented, multi-disciplinary group comprising a small number of representatives from marketing, technology, and finance, focused on a single objective - planning their company's profitable entry into a new business."
>
> (1982:260)

A venture team is a temporary unit which essentially deals with new product development at the corporate level, and its members are only accountable for the new product development activities whilst the unit is in operation. That is to say they are free from bureaucratic obstacles and day-to-day operating problems.

Cunningham, et al., (1981) and Hisrich, et al., (1978) present five distinguishing characteristics of venture teams. These are as follows:

(a) Multidisciplinary

The members of the team are drawn from different functional areas within the firm. The specific fields involved may vary from company to company but more often that not the members are drawn from engineering, production, marketing and finance. While some members stay with the team as long as the product idea is under consideration, others are phased in and out of the team in response to changing product development requirements.

(b) Organisationally separate

The venture team is separate from the permanent structure of the organisation. As put by Cunningham, et al., "the generation of a continuing stream of new product ideas about the product in question requires that the permanent members of the team not be involved at all in the day-to-day operations of the company." (1981:255)

(c) Top management support

The team reports directly to the chief administrative officer of the firm. As such, the existing lines of authority in the permanent organisation are not necessarily valid in the venture team.

(d) Entrepreneurial in spirit

Venture teams are typically free of time pressures. This fosters creativity and innovativeness. The entrepreneurial spirit is also heightened by using bright people as team members and freeing them from their traditional job responsibilities, as well as sometimes allowing them to share in the profits once the product reaches the market.

(d) Flexible in life span

Although venture teams generally function within the general guidelines of a development plan with several phases or check points, the completion schedules are loosely defined. The life span of the team is therefore not strictly

prescribed.

Figure 2.2 illustrates the position of the venture team in relation to the rest of the organisation.

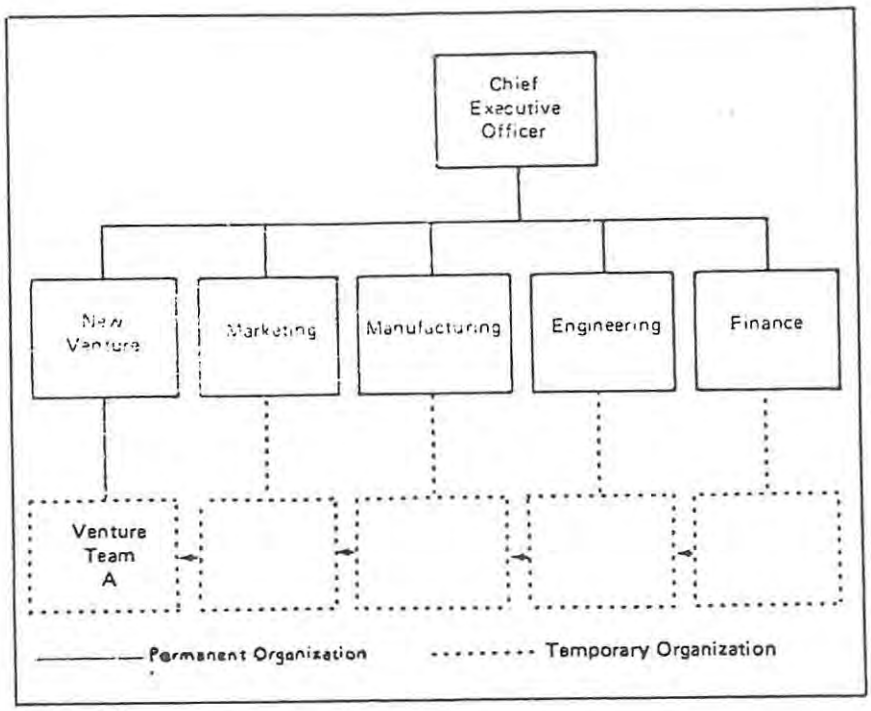

FIGURE 2.2 THE POSITION OF THE VENTURE TEAM IN ORGANISATIONS (Cunningham, et al., 1981:255)

While thus far the venture team has been viewed solely in a positive light, one must not lose sight of the fact that there are some disadvantages of such an organisational structure for new product development. These are as follows:

(a) the running of such teams is costly,

(b) it may be very difficult to find the right person to head the team, and

(c) there exists a potential danger that the members of a

venture team may not recognise a product's fatal flaw since they become emotionally involved with the project.

2.2 TASK FORCE

Wind states that task forces "group individuals from various functional areas to form a special ad hoc unit for the purpose of coordinating and managing the development of an assigned new product". (1982:491)

As such, they are very similar in nature to venture teams. Like the latter, they represent a temporary unit and their members are involved in the project on a full time basis. The essential difference between the two is, however, that a task force services either a division or a product group and not the corporation as a whole, as is the case with venture teams. Furthermore, task teams are more often than not provided with a specified product concept, while it is the task of venture teams to arrive at a product concept.

George (1977) reports that Litton made successful use of task teams for, amongst other things, the development of new products. He is of the opinion that this provided a flexible organisation which enabled the company to take advantages of arising opportunities.

2.3 NEW PRODUCT DEPARTMENT OR DIVISION

Both the new product department and division are full-time, permanent units. The difference between these two lies in the organisational level they serve and the degree of self-sufficiency which they exhibit. While the new product department serves a single division or a strategic business unit, the new product division serves the entire corporation, is normally larger and more self-sufficient.

These structures separate the new product development tasks from the existing divisions in the organisation in order to centralize the new product decision-making process and to eliminate the redundancy of these tasks across divisions.

Ideally, the people selected for the new product department or division should still communicate effectively with their peers in the operating departments.

Cunningham, et al., (1981) state that the functions of a new product department or division include:

* recommending new product objectives,
* planning the exploration of new product ideas,
* screening new product ideas,
* assisting in the development of new product specifications,
* recommending and implementing test marketing, and
* coordinating interdepartmental effort during the evaluation

process.

The new product department may be situated in one of several places within the organisation. This is illustrated in Figure 2.3.

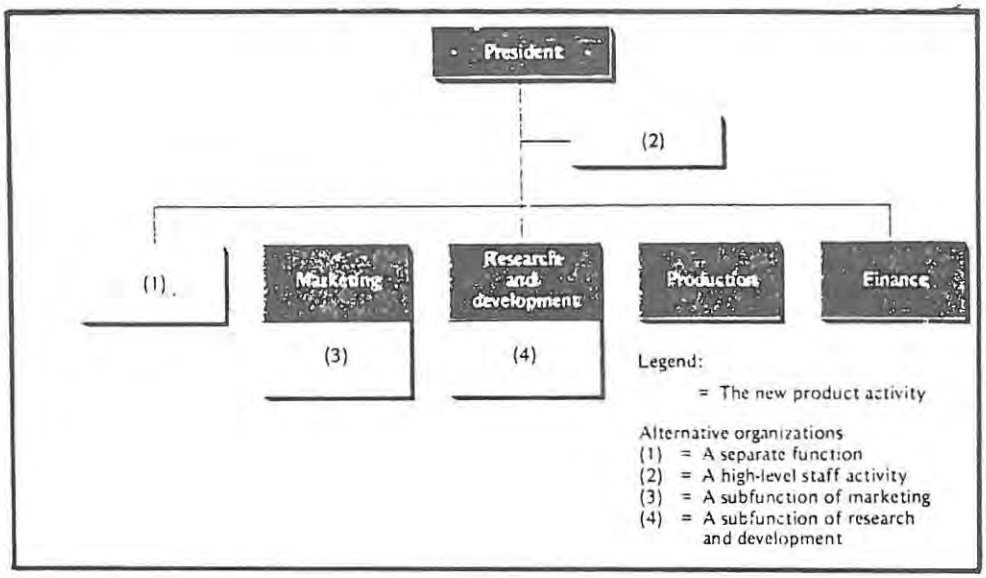

FIGURE 2.3 THE POSITIONS OF THE NEW PRODUCT DEPARTMENT IN ORGANISATIONS (McDaniel, 1982:260)

An advantage of this type of new product development organisation is that the formality of it allows the authorities and responsibilities to be well defined and given to specific individuals. Therefore the full-time nature of the members decreases the likelihood of new product ideas being lost in the bureaucracy.

On the more negative side, the members often have to rely on their "influential authority" to obtain the necessary cooperation from the various functional areas of the firm.

2.4 NEW PRODUCT COMMITTEE

The new product committee is usually made up of the president of the firm along with managers from the major functional areas. It is a temporary unit, because once it approves a new product idea, that idea is turned over to the marketing department to introduce the new product to the marketplace.

The nature of such an organisation for new product development becomes clearer when considering the inherent advantages and disadvantages of employing this structure.

The advantages include the following:

(a) the ideas and expertise of key executives are pooled since they are brought together from different backgrounds to work on a common problem (Cunningham, et al., 1981; Hisrich, et al., 1978 and McDaniel,1982),

(b) the decisions made by the committee are likely to be accepted readily since they are made by individuals representing all the departments (McDaniel,1982),

(c) there is no time wastage as the committee is organized and used only when it is needed (Hisrich, et al., 1978 and McDaniel,1982),

(d) no line and staff conflict exists within the committee because the members are all drawn from the upper management

levels (Hisrich, et al., 1978), and

(e) the members may be recruited either for special purposes, such as to participate in the brainstorming process to generate new product ideas, or to participate in the entire new product development process (Hisrich, et al., 1978 and McDaniel, 1982).

On the other hand, the disadvantages of this structure include the following:

(a) the members only work part-time for the committee and are therefore still immersed in their own day-to-day departmental problems. This can result in their limiting their contributions to the committee (Cunningham, et al 1981; Hisrich, et al., 1978 and McDaniel, 1982),

(b) decisions tend to be made rather slowly (Cunningham, et al., 1981),

(c) because of the informal existence of the committee, the responsibilities and roles of the various members are often not clearly defined (Hisrich, et al., 1978 and McDaniel, 1982); and

(d) a narrow view of the committee's purpose may result from the fact that members tend to concern themselves only with their departmental objectives, rather than with the firm's goal (Hisrich, et al., 1978 and McDaniel, 1982).

While these disadvantages represent serious obstacles, they are not insurmountable. Cunningham, et al., (1981), in attempting to avoid these pitfalls, present the following guidelines which should be observed if a company decides to use a new product committee.

(a) Management must establish the committee's responsibilities in writing,

(b) the committee must have formal agendas and minutes of the proceedings,

(c) a strong and most senior leader must be appointed to chair the committee; and

(d) while representatives of each department must be included on the committee, it must also be kept small enough so as to be manageable.

2.5 NEW PRODUCT MANAGERS AND PRODUCT MANAGERS

According to Hisrich, et al., (1978) the product manager concept was innovated by Procter and Gamble some fifty years ago.

The primary difference between the new product development roles of new product managers and those of product managers lies in their time commitment to this function. While a new product manager is appointed on a permanent basis within a decentralized organisation to direct all his attention to the development of

new products in a division or a department, the product manager performs his new product function on a part-time basis. The new product managers can be likened to one-person new product departments serving the needs of one or more divisions or departments, while the product managers are responsible for developing line extensions, modifications and items related to their basic product responsibilities.

Product managers assume the responsibility of marketing decision-making throughout a product's life cycle, while new product manager's hand 'their' new product over to the appropriate division or department either once it is ready to be launched, or just after it has been launched.

New products arising from product management essentially evolve out of the existing organisational structure and no complex organisations for new product development are therefore required to be employed. Such an organisation is common in consumer markets since many of the new products in these markets are less likely to be unique or discontinuous like those in the highly technical product markets.

Having considered the various types of organisations available to companies for their new product development function, it now becomes appropriate to consider the circumstances under which each is most suitable.

3. CHOOSING AN ORGANISATIONAL STRUCTURE TO FACILITATE NEW PRODUCT DEVELOPMENT

The choice of an organisation for new product development will typically depend on a number of criteria. Included amongst these are:

* the availability and quality of human resources,
* the magnitude of financial resources available,
* the existence or non-existence of time constraints,
* the size of the firm,
* the type of market,
* the new product objectives of the company, and
* the compatability of each structure with the existing organisational structure.

Since each set of circumstances will be unique, one cannot arrive at prescriptions for the choice of an organisation. What one may however do is present generalized guidelines.

Venture teams and task forces tend to be best suited to large corporations interested in developing totally new products. This is supported by Hisrich, et al., who state that venture teams "...seem to be best suited to the design and development of new products that do not necessarily fit into the ongoing business of the firm". (1978:442)

Pessemier also supports this in that he says that venture teams

> "...are most frequently used to handle important business and product development tasks that (1) do not fit neatly into the existing organisation, (2) demand more financial resources and longer times to mature than existing organisational units can typically provide, and (3) require imaginative entrepreneurship that is neither sheltered or inhibited by the existing organisation."
>
> (1977:442)

Hisrich, et al., (1978), suggest that the new product department organisation is best suited to companies having single product lines accompanied by traditional functional marketing organisations. New product committees, on the other hand, are more suited to smaller companies which cannot afford full-time personnel for new product planning and development and finally, the product manager type organisation is appropriate for use by firms having multiple product lines.

Essentially, when choosing an organisational structure, a company will have to consider whether it requires a permanent or temporary unit and whether the members of the unit will be engaged full-time or part-time. It may be noted that Grayson, in 1969, found that companies which maintain full-time new product executives produce 69% more new products than those with part time executives, and 60,5% more new products than firms having no new product executives at all. (Hisrich, et al., 1978) Such findings testify to the importance of full-time commitment to new product development on the part of most large firms.

As stated previously, the suggestions presented in this section

represent suggestions and not prescriptions; each company has to evaluate its own unique set of circumstances in order to ascertain which structure will be best suited to its needs.

Furthermore, the company is not restricted to choosing only one of the available structures. As put by Urban, et al., "any particular firm may wish to combine two or more structures". (1980:532)

In this research study, an attempt will be made to determine whether there is any correlation between the structure implemented and the size of the organisation.

Having considered the major organisational arrangements, it now becomes appropriate to devote considerable attention to the new product development process itself. This forms the topic of discussion for Chapter 3.

CHAPTER THREE

THE NEW PRODUCT DEVELOPMENT PROCESS

CONTENTS

1. INTRODUCTION

The purpose of this introduction is two-fold: firstly, to discuss the nature and types of new products and secondly, to present a selection of new product development processes prescribed by the literature.

1.1 THE NATURE AND TYPES OF NEW PRODUCTS

1.1.1 Defining new products

Hisrich and Peters (1978) recognise the dilemma faced by marketing executives in defining new products. Buijs also acknowledges this problem by stating the following: "as in the case with strategic planning, the terminological confusion in the field of product innovation is enormous. Almost every author has his own definition". (1979:25)

The problem lies in the fact that there exists different degrees of newness. The question is one of how new a product should be to be classified as being a new product. The literature's opinion appears to be divided on this matter. Cunningham, et al., for example, say "relatively few of the many products introduced to the market each year are entirely new. To be considered as such, these products would have to perform a completely new function for the buyer".

(1981:250) From this it appears as if the authors only regard innovative products as being "new products".

Wind, on the other hand, appears to consider both innovation and imitation as resulting in so-called new products. He says "whether management decides to engage primarily in innovative new product development or innovative imitation..., the new product development effort should be planned". (1982:242)

Sawyer (1977) defines innovation as the useful new combination of resources but it may be argued that imitation can also be defined in the same manner.

The controversy surrounding the defining of a new product is made evident when looking at a number of proposed definitions. The following definitions are presented in order to illustrate this.

(a) "A new product is one which either performs a new function or provides a significant improvement over existing products." (Cunningham, et al., 1981:250)

(b) "'New products'...mean 'products new to the company': This definition embraces original products, major modifications of existing

products, duplications of competitors' products, and product-line acquisitions, all of which involve assimilation of something 'new' into the product mix." (Kotler,1972:314)

(c) A new product is "... a product/service that is significantly different from anything a company currently offers." (Cafarelli,1980:3)

(d) "Any product that users treat as an addition to available market offerings qualifies as a new product." (Pessemier,1977:11)

As is apparent, the definition of a new product varies considerably depending upon the perspective adopted. That is to say, whether it is from the consumer's point of view or from the company's point of view.

While companies tend to call their product "new" even if there are only slight changes in packaging or if they are introducing a product which is already sold by other companies, some consumers may only see products which have not been previously available as being "new".

The definition of a new product adopted for the purposes of this study will be discussed in Chapter 4 of this thesis.

1.1.2 Types of new products

The problems recognised in defining new products reappear when attempting to classify new products. It is for this reason that new products can be classified in two ways: from the consumers' point of view or from the companies' point of view.

(a) The consumers' viewpoint

Hisrich, et al., (1978) present Robertson's (1974) attempt at identifying schematically the types of new products from a consumer's point of view. The new products are classified according to how much behavioural change or new learning is required by the consumer in order to use the product.

The continuum for classifying new products in this way is presented in Figure 3.1.

Continuous Innovations	Dynamically Continuous Innovations	Discontinuous Innovations
Least disrupting influence on established consumption patterns	Some disrupting influence on established consumption patterns	Involves establishment of new consumption patterns and the creation of previously unknown products

FIGURE 3.1 A CONTINUUM FOR CLASSIFYING CONSUMER NEW PRODUCTS (Hisrich, et al., 1978:9)

Most so-called 'new products' tend to fall in the

continuous end of the continuum which includes products such as fashion styles. An example of a product falling into the dynamically continuous innovations category is the electric toothbrush, while those products in the discontinuous innovations category include products which perform either a previously unfulfilled function or an existing function in a new way.

(b) The company's viewpoint

Johnson and Jones (1957) first presented a manner for the classifying of new products from the company's point of view. (Hisrich, et al., 1978 and Pessemier, 1977) This classification scheme is presented in Figure 3.2.

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

FIGURE 3.2 JOHNSON AND JONES' CONSUMER NEW PRODUCTS' CLASSIFICATION SCHEME (Hisrich, et al., 1978:10)

As one moves from left to right the difficulty of product development, the importance of production problems and the chances of technical failure increase. On the other hand, as one moves from top to bottom, the amount of marketing effort required and the chances of marketing failure increase.

The most complicated situation is that in which both new technologies and new markets are involved. In such cases a carefully planned marketing strategy is essential. Product replacements, extensions, improvements, reformulations and remerchandising, however, involve less complicated marketing strategies since the firm will have had experience with a similar product or with basically the same target market.

It is now necessary to elaborate on some of the categories of new products.

(a) Remerchandising

With products falling into this category there is no actual technological change but rather there is an improvement in the marketing strategy which is aimed at

increasing the size of the existing market. The improvement may constitute things such as increases in the sales force, increases in advertising, the introduction of new distribution channels or perhaps even a decrease in price.

(b) Market extensions

Products falling into this category may or may not result from new technology. The same product may be introduced to a new market without having undergone any changes. A common example of market extensions is expansion to international markets with the original product.

While Wind is of the opinion that remerchandising and market extensions constitute new product categories, it may however be argued that they merely represent changes in the marketing strategy and not new products. The reason for such an argument lies in the fact that the original product does not necessarily undergo any changes and, as such, no new product development has really occurred.

(c) Product replacements

These products result from significant developments in new technology. The new product satisfies the demand for the original product which more often than not becomes obsolete. One such example is the pocket calculator which made the slide rule obsolete.

(d) Product improvements

Product improvements most often involve improved technological inputs into the product, and they have the potential to increase the sales volume of the product to the same market. The latter arises if competitors' consumers are attracted to the product as a result of the improvements.

(e) Product line extensions

Product line extensions enable the company to use the same communication and distribution channels to serve the same market. They can take on two directions: firstly, they can provide the consumer with variations in style, colour, quality or some other features or secondly, they can provide the consumer with related products. An example of the

former is the introduction of a new flavour of potato chips, while an example of the latter may be the introduction of packet sauces by a company producing packet soups.

(f) Diversifications

Products constituting diversifications are products which are significantly different from the company's original product. This strategy adds a new market of consumers to those presently being served and can be achieved by acquiring another company, licensing a product invented by someone else or internally developing a new diversified product. Products falling into this category display the highest risk of failure as the company probably has little or no expertise in the market.

Having given consideration to the nature and types of new products, attention will now be focussed on the processes prescribed by the literature for the development of such products.

1.2 THE NEW PRODUCT DEVELOPMENT PROCESSES PRESCRIBED BY THE LITERATURE

Since the prevalence of new product failure was identified in

Chapter 1, it follows that it is incumbent on management to make conscious attempts to minimize the probability of their new products being classified as failures.

One way in which they may reduce this risk is by following a systematic approach to their new product development activities and efforts. At each successive stage of this systematic process evaluations must be made and conscious decisions must be taken as to whether to continue with the project or abandon it.

Since the future is, by definition, uncertain it is absolutely impossible to be certain that a product launched today will by successful tomorrow. The fact of the matter is, however, that it is the responsibility of management to reduce the risk of failure as far as possible.

While the literature emphasizes the need for a formal and systematic process for the development of new products, Wind acknowledges the fact that this is not always observed in practice:

> "An informal examination of new product development systems employed by various consumer and industrial firms suggests that many firms do not have a formal and comprehensive new product development system, and that those systems, when available, evolved over the years and were not the results of systematic planning."
>
> (1982:218)

The new product development systems presented by the literature

vary from one author to another. While some stages, such as the idea generation stage, appear to be common to all of the recommended processes, the latter differ not only in the number of stages they are comprised of, but also in the actual descriptions and contents of each stage.

To enable the reader to appreciate the differences in the recommended processes, a sample of these is presented in Table III.1.

Wind (1982) states that the commonly found new product development processes may be criticised as having a number of weaknesses. These are as follows:

(a) most of the suggested processes tend to start with some form of idea generation without giving prior concern to the setting of explicit new product objectives,

(b) they have little concern for the design of continuous evaluation systems of the product's performance,

(c) they tend to have one stage in which formal economic evaluation is undertaken instead of developing a system in which economic evaluation of the idea, concept or product is examined at each stage in the process; and

(d) they mix the actors (i.e. those involved in new product development activities) and the activities involved in new

TABLE III.1 A SAMPLE OF NEW PRODUCT DEVELOPMENT PROCESSES

	NEW PRODUCT DEVELOPMENT PROCESSES			
	UDELL AND LACZNIAK (1981:241)	CUNNINGHAM AND CUNNINGHAM (1981:259)	KOTLER (1986:337)	URBAN AND HAUSER (1980:33)
STAGES IN THE NEW PRODUCT DEVELOPMENT PROCESS	Idea generation	Idea generation	Idea generation	Opportunity identification
	Economic analysis	Product evaluation	Screening	Design
	Societal analysis	Economic analysis	Concept development and testing	Testing
	Business analysis	Product development	Marketing strategy	Introduction
	Technical development and testing	Test marketing	Business analysis	Profit management
	Market testing	Commercia-lization	Product development	
	Product introduction		Market testing	
	Further development		Commercia-lization	

product development.

Wind unfortunately does not explain why he considers the mixing of the actors and the activities to be a serious problem.

In the light of these criticisms Wind proposed a new product development system which is presented in Figure 3.3.

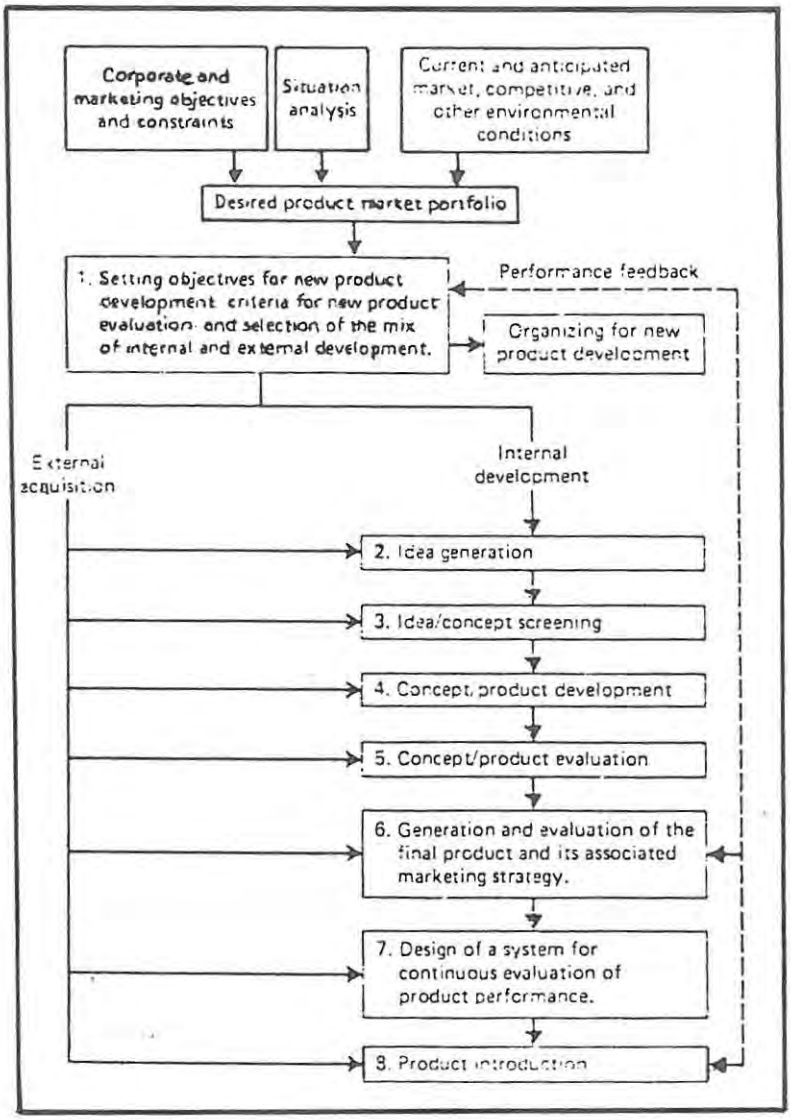

FIGURE 3.3 WIND'S NEW PRODUCT DEVELOPMENT PROCESS (Wind, 1982:229)

The new system incorporates the setting of objectives, which Wind claims to be lacking in other systems, as well as a stage for the design of a system for the continuous evaluation of product

performance. It furthermore, according to Wind, separates the "actors" from the activities of the process. It accomplishes this by having a separate table for the representation of the interfunctional involvement in the process. This table is contained in Figure 3.4.

Stages in new product development process	Organizational function					
	Top management	Marketing	Finance	R&D	Manufacturing	Other (legal, procurement, personnel, etc.)
1. Setting objectives or selection of internal vs. external development	Primary responsibility	Inputs	Inputs	Inputs		
2. Idea generation		Primary responsibility	Inputs	Primary responsibility	Inputs	Inputs
3. Idea/concept screening	Approval	Primary responsibility			Inputs	Inputs
4. Concept/product development		Primary responsibility		Primary responsibility	Inputs	Inputs
5. Concept/product evaluation	Approval	Primary responsibility				Inputs
6. Final product evaluation & development of marketing strategy	Approval	Primary responsibility		Inputs	Inputs	Inputs
7. Continuous evaluation of product performance	Approval	Primary responsibility	Inputs	Inputs	Inputs	Inputs
8. Product introduction		Primary responsibility			Primary responsibility	

FIGURE 3.4 THE INTERFUNCTIONAL INVOLVEMENTS IN WIND'S NEW PRODUCT DEVELOPMENT PROCESS (Wind, 1982:231)

Despite the fact that Wind presents a recommended new product development process, he does recognise the fact that a new product development system cannot be transferred directly from one company to another without being modified so as to be appropriate for that company's set of circumstances. Similarly, van der Merwe, et al., (1975) maintain that the development process is as its best when it is tailormade to suit the circumstances of each individual firm.

The recommended processes must therefore be seen as frameworks for the design of tailormade new product development systems and not as ends in themselves.

Having presented some recommended new product development processes, it now becomes appropriate to develop one and to discuss more fully the activities contained in that process.

2. THE NEW PRODUCT DEVELOPMENT PROCESS

Notwithstanding the improvements made by Wind in his new product development process, this researcher is of the opinion that his new product development process is still lacking in that some aspects of the traditional new product development processes are omitted.

An adapted model has therefore been formulated in an attempt to incorporate the positive aspects of Wind's new product development process as well as those of what might be called the traditional new product development processes (most notably that of Kotler's).

The adapted model which serves as the structure for the discussion in this section appears in Figure 3.5.

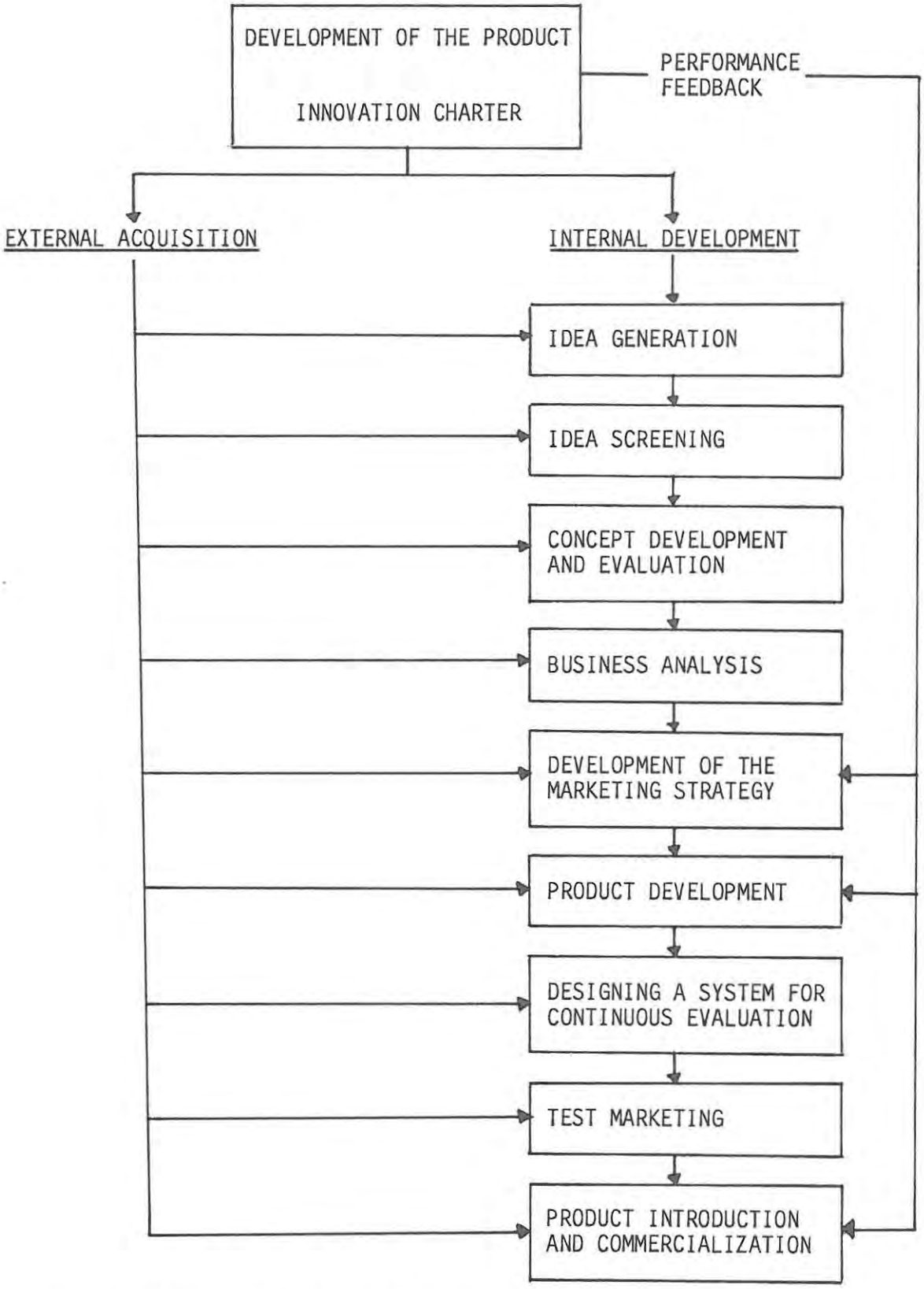

FIGURE 3.5 THE ADAPTED NEW PRODUCT DEVELOPMENT PROCESS

Each successive stage of the presented model will now be discussed in turn.

2.1 DEVELOPMENT OF THE PRODUCT INNOVATION CHARTER

The product innovation charter represents a guideline which establishes the parameters for new product development.

It gives rise to the objectives for the new product development program and should, according to Cafarelli,

> "... show the direction and the area you would like to explore without being too specific about the nature of the explanation process, and without being too exact in defining specific end results."
>
> (1980:37)

The establishment of the product innovation charter is essential as it lends direction to the new product development process and serves as a necessary starting point for the generation of new product ideas.

The source of input to the product innovation charter is the strategic planning system. As was made apparent in chapter one, corporate planning and strategic planning occur before venture planning and are necessary prerequisites. Venture planning is itself a strategic alternative emerging out of the strategic planning process and new product development represents one of the available venture strategies.

Consideration of the external environment has a great impact on the strategic alternatives. This evidences itself in the strategic planning process as presented in Figure 3.6.

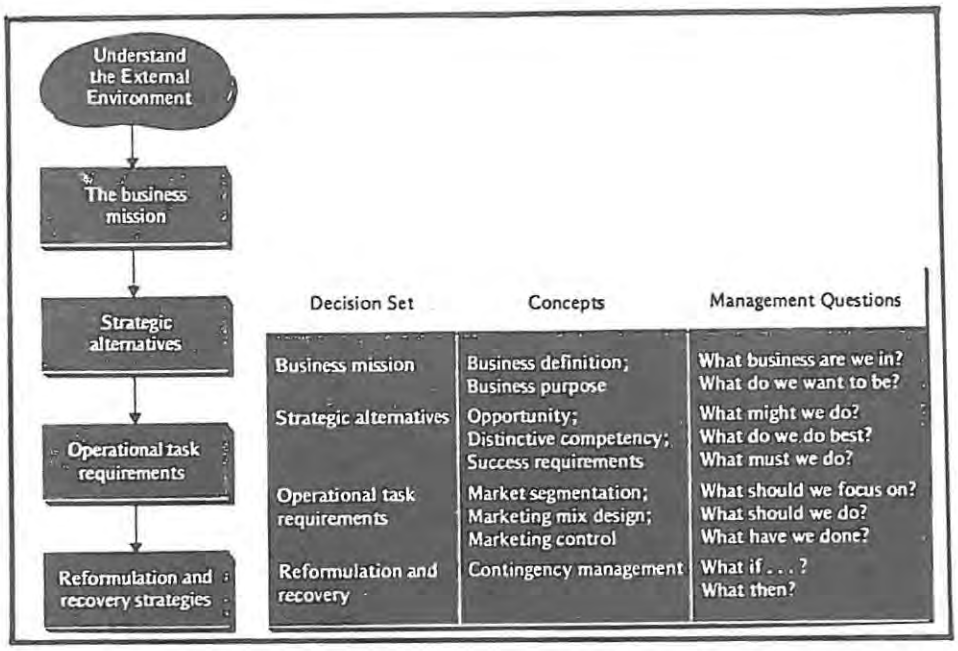

FIGURE 3.6 THE STRATEGIC PLANNING PROCESS (McDaniel, 1982:40)

Current and anticipated market, competitive and other environmental factors therefore serve as input to the strategic planning process and hence also to the product innovation charter.

In summary then, it may be said that the product innovation charter emerges out of the strategic planning process and, as such, represents a guideline for new product development by establishing the boundaries for, and objectives of new product development in accordance with the external environment.

It furthermore serves as an evaluative tool as it represents a set of standards against which new product ideas, concepts or products may be evaluated during the stages of the developmental process.

Typical factors comprising the produce innovation charter are shown in Figure 3.7.

The strategic arena

A. Product type or class
B. End-user application/activity
C. Customer group
   1. User status: current/new
   2. Demographic dimensions
   3. Psychographic dimensions
   4. Distribution status
D. Technology
   1. Scientific/technical
   2. Operations
   3. Marketing

Goals of the new product activity

A. Growth
   1. Rapid growth
   2. Controlled growth
   3. Maintenance—renewal
   4. Controlled decline—harvest
B. Market status
   1. Create new market opportunity
   2. Increase share—aggressive
   3. Hold share—positional
   4. Yield share
C. Special purposes (examples)
   1. Diversification
   2. Regularize seasonality
   3. Avoid being acquired
   4. Complete a line
   5. Return on investment/assets
   6. Payback
   7. Maintain/alter an image
   8. Others

Program to achieve goals

A. Source of key innovative element
   1. Market/marketing
      a. Competitors' products
      b. Repositioning
      c. Franchise extension
         (1) Brand/company name
         (2) Sales force franchise
         (3) Trade status power
      d. User studies, unmet needs
   2. Manufacturing/operations
      a. Process/manufacturing engineering
      b. Output quality
      c. Low cost
   3. Technical innovation
      a. Internal sources
         (1) Basic research
         (2) Applied research
         (3) Development/engineering
      b. External sources
         (1) Joint venture
         (2) Licensing
         (3) Acquisition
B. Degree of innovativeness used
   1. Pioneering uniqueness
      a. State-of-the-art breakthrough
      b. Leveraged creativity
      c. Applications engineering
   2. Adaptive: technical/nontechnical
   3. Imitative/emulative
      a. Quick second
      b. Segment franchise
      c. Economic—price aggressive
C. Precedence/timing
   1. First to market
   2. Quick reactive
   3. Late reactive
D. Special dimensions (examples)
   1. Functional avoidance
   2. Regulatory avoidance
   3. Product quality level
   4. Patentability
   5. Systems or no systems
   6. Competitor avoidance
   7. Growing markets only
   8. Others

FIGURE 3.7 THE FACTORS TYPICALLY CONTAINED IN THE PRODUCT INNOVATION CHARTER

A brief discussion of each of the three major areas of the product innovation charter follows:

(a) The Strategic Arena

This section of the product innovation charter defines the current business of the organisation. It includes considerations of the product types, the applications of the product, the customer groups being served as well as the technology employed.

The determination of these factors arises out of the strategic planning process where the company gives consideration to its business mission.

(b) The Goals of the New Product Activity

While the previous section determines "where the business is at", this section determines "where the business would like to be", in terms of its product mix and growth objectives.

It states not only the rate of growth the company wishes to achieve but also the status it wishes to earn in the marketplace and the purpose of its new product development program. As such, this section contains objectives which the new product development program must attempt to achieve. These objectives arise out of the strategic planning process where the company determines where it would like to be in the future.

(c) The Program to Achieve Goals

While the previous section prescribes the goals of new product development, this section serves as a plan for the achievement of the goals.

Consideration is given to the source of the key innovative element (whether it be of a marketing, manufacturing or technical nature), as well as to the degree of innovativeness to be employed. The innovativeness refers to the 'newness' of the product. That is to say, whether it will be uniquely innovative, at the one end of the continuum, or imitative at the other end. A further two factors which are considered are the timing of the new product's entry into the marketplace and whether there are any other special dimensions such as patentability or the desire to avoid competitors.

As stated previously, the product innovation charter arises out of strategic planning for the purpose of providing objectives, guidelines and parameters for new product development.

Having established the above, the company is in a position to generate new product ideas, within the boundaries of the charter, and to achieve the objectives laid out in the charter. This leads the discussion to the second stage of the new product development process.

2.2 IDEA GENERATION

The objective of this stage is to develop as many new product ideas as possible. The greater the number of ideas that are generated, the greater is the probability of a successful outcome. Wind in fact states the following:

> "The fewer the ideas generated, the greater the risk that if these ideas do not meet the criteria set for subsequent screening and evaluation, management will be left without any new product entries, or even worse, it would be tempted to relax its performance requirements and introduce an inferior product."
>
> (1982:247)

The requirement that a large number of ideas be generated was further emphasized by a study conducted by Booz, Allen and Hamilton in 1968. They found that approximately 58 ideas were needed to generate one new product to be commercialized. The remaining 57 ideas were rejected during the development process: 46 failed and were eliminated during product evaluation, 5 were terminated during the economic analysis because of their lack of profit potential, 4 did not pass successfully through the product development stage and finally, 2 did not survive the market test. (Cunningham, et al., 1981)

A more recent study by Booz, Allen and Hamilton, however, concluded that companies are now able to turn one out of seven ideas into a successful new product. Booz, Allen and Hamilton attributed this to the fact that many companies are pre-

screening, planning more effectively and are only investing money in the best ideas, rather than employing a shotgun approach. (Kotler, 1986 and Luck and Ferrel, 1985)

Figure 3.8 illustrates the decay of new product ideas over the stages of the new product development process.

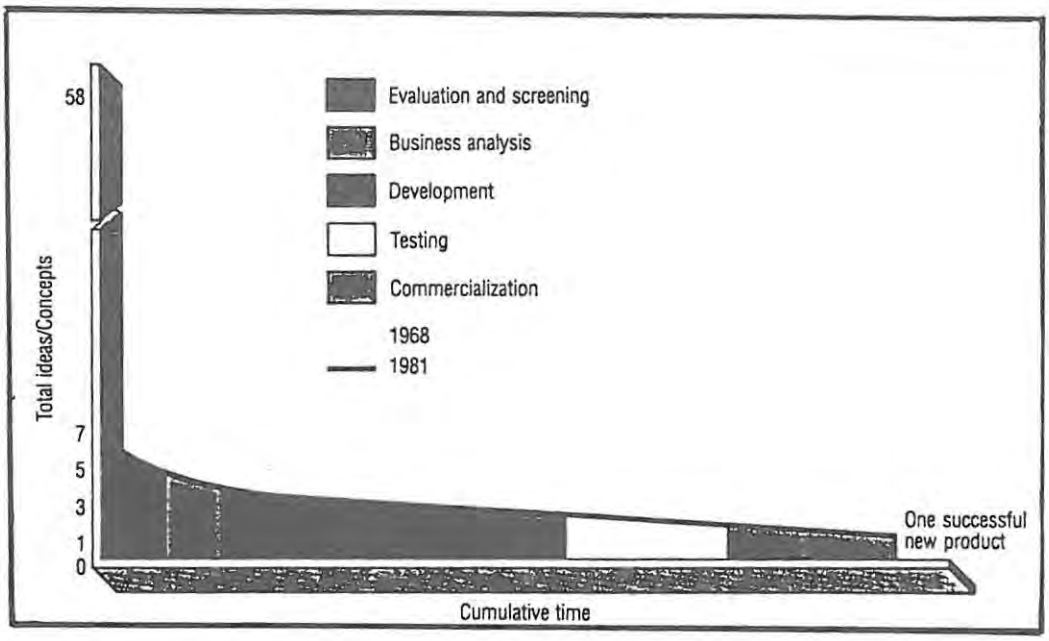

FIGURE 3.8 THE DECAY CURVE OF NEW PRODUCT IDEAS (Kotler, 1986:338)

The fact of the matter is, however, that numerous ideas are required to be generated if a successful product is to arise out of the new product development planning process. Since new product developers deal with a number of ideas or concepts at any one time, they may be regarded as being portfolio managers of new product ideas or concepts.

The question of where these new product ideas originate from arises. The following discussion represents an attempt to answer this question.

2.2.1 Sources of new product ideas

New product ideas have their roots in a wide variety of sources. Each of these will now be briefly presented.

(a) Advertising agencies

Since the generation of new product ideas requires creative thought, it is not surprising that advertising agencies represent a source of such ideas as they are staffed by people who see things in an innovative way.

These people can constitute a valuable source of ideas as long as the organisation has a healthy and supportive relationship with the agency.

(b) Consumers

Consumer suggestions for new products are often useful. While some consumers may mail in ideas, the marketing research department of an organisation should be alerted to the possibility of consumers constituting valuable new product idea sources and should be asked if they are engaged in projects which may be able to tap such

resources. Organisations may furthermore formally arrange for customers to have an opportunity to express their new product ideas.

(c) Research and Development

This department in an organisation constitutes a rich source of new product ideas. Studies in fact show that it is the source of more ideas than any other. For example, Booz, Allen and Hamilton found that 88% of ideas come from within the companies themselves and, of this, research and development contributed 60%. (Hisrich, et al., 1978)

Marketers should therefore establish a strong liaison with the research and development department and familiarize themselves with the goals of their program and the direction they are taking so that the department can forward any relevant ideas or data.

Research and development leads to two types of innovations. The first of these, supply-pushed innovations, are typical of firms in which the research and development department is "king". According to Steele, such innovations "... result from persistent ... advocacy of an inventor who sees an opportunity or latent need that he

believes he can satisfy or who conceives a solution for which he seeks to demonstrate or even create a need". (Wind, 1982:271)

The second type, demand-induced innovations, are much more receptive to market demands and rely on requests and suggestions outside the research and development group.

(d) The marketing department

Many marketing people are innovative and may therefore be able to provide suggestions for new products. One of the advantages is that marketers are close to the activities of competition and are hence in a position to be aware of informed, or rumoured or actual products that have entered or are about to enter the marketplace.

(e) Competition

A formal procedure for monitoring competitors' new product activities should be established. Such a procedure should concern itself not only with information concerning forthcoming new products but also with the sales performance of new products which have already been introduced. This information is valuable to the new product development function of a company.

(f) Distribution channels

Members of a company's distribution channel are close to the marketplace and are therefore most familiar with the needs of the market. As such, they constitute an important new product idea source.

(g) Sales force

As with the distribution channel members, a company's sales force experiences constant customer contact and is therefore in a position to understand customer needs. This grass roots experience is valuable in the generation of new product ideas.

(h) Employees

Using employees as a new product idea source can prove to be motivating for those employees involved. Such ideas must not evolve in a haphazard manner however; they must originate from a well managed, formal suggestion system. Incentives such as cash, contests or corporate recognition and praise should constitute an integral part of such a system.

Both Kotler (1972) and Udell, et al., (1981) recognise the importance of having an organized network for the

collection of new product ideas from the various sources described above. Udell and Laczniak (1981) recommend three major requirements for such a network. These are as follows:

(i) Company personnel should be presented with a clear vision of the company's goals and fields of interest; otherwise, idea generation is likely to be not only chaotic but also nonproductive,

(ii) management should identify the likely sources of good ideas and provide a central collection point so that ideas are automatically referred for evaluation, rather than being pigeonholed or lost because they never reached appropriate personnel within the company, and

(iii) management should provide resources and mechanisms to encourage idea generation.

The product innovation charter, as mentioned in the previous section, serves an important role in respect of the idea generation stage since it provides an outline of the company's goals and fields of interest. As such, it prescribes the boundaries of new product ideas and ensures that suggested ideas

are within the fields of interest.

Having given consideration to the potential sources for new product ideas, it now becomes appropriate to consider various methods used to generate new product ideas.

2.2.2 Methods for the generation of new product ideas

A vast number of ways to release creativity and hence generate new product ideas in the company's fields of interest exist. Each of these will be discussed in turn.

(a) Brainstorming

This technique evolves from the principle that people can be stimulated to greater heights of creativity by meeting with others and participating in organized group experiences. It is essentially "... a free-wheeling situation in which the participants feel free to say anything that comes to their mind with even the vaguest relation to the problem being discussed". (Cafarelli, 1980:58)

According to Douglas, Kemp and Cook (1978), the participants should be drawn from all the departments concerned with the development program and one participant should take notes during the

focussed idea generation.

Hisrich, et al., (1978) also make mention of what is called reverse brainstorming. When using this technique, a list of a particular product's shortcomings is devised. This list then provides the direction for discussion on new products and product improvements. The limitation of this approach is, however, the fact that the problems are based on management's perception and there is no indication that these are important problems for customers.

(b) Synectics

This technique can be said to be a more structured version of brainstorming. It essentially represents a set of rules to overcome the two main faults of business meetings, namely the reluctance of participants to put up speculative ideas while in the presence of superiors and the occurrence of good ideas being lost or rejected without a fair hearing.

It is this writer's opinion that brainstorming and synectics can be combined to form a useful technique for the generation of new product ideas.

(g) Gap analysis

Douglas, et al., (1978) note that the existence of gaps in a market such as, for example, price gaps, serve as an impetus for new product ideas. In conducting a gap analysis market research techniques may be used. Consumers are asked to rate all brands in the market on a large battery of attitude scales and a computer is then used to search for the evidence of gaps.

Such a technique is not without problems. While it is expensive and time consuming, it also tends to suggest gaps which are perfectly obvious (e.g. an all electric heating system which is as cheap to run as a gas one) or gaps for products which people may not want. As put by Douglas, et al., "there may be a gap in the market, but is there a market in the gap?" (1978:67)

(d) Using other people's ideas

Many new product ideas may have been thought of but not yet exploited. Access to such ideas quite obviously represents an opportunity.

Ideas may also be "stolen" from foreign markets. When using this method for the generation of a new product idea though, the positioning of the new

product should be most carefully considered as local markets may not be receptive to the product.

(e) Utilizing market research

Market research may be used as a means to stimulate new product idea generation by conducting attitude research. This can be carried out by using consumer groups in a synectic - style discussion. The major problem is, however, that consumers find it difficult to verbalize their needs. As a result, most ideas generated tend to be either impractical or obvious. Furthermore, it must be remembered that consumers naturally have a different frame of reference to the manufacturer. That is to say, they desire inexpensive products which are both reliable and of a high quality, while the manufacturer faces a trade-off between these qualities.

(f) Attribute listing

With attribute listing, the existing attributes of a product idea or current product are listed. These attributes are then modified until a new combination of attributes emerges that will improve the product idea or the current product.

This technique cannot be used in all new product situations; it is best suited to develop a new product idea that has emerged by means of another method. This is so because it tends to focus on the product at hand and is, as such, a narrow approach.

(g) The use of focus groups

It may be argued that this approach is, in itself, a means of consumer research. When utilizing the approach, a group of people are guided through an open, in depth discussion by a moderator. To generate new product ideas the moderator must focus the discussion of the group on the new product area in a non-directive manner.

Focus groups are used not only for the generation of new product ideas but also for a number of purposes such as to gain an understanding of, for example, the consumers' perception of a current product's promotional campaign.

(h) Problem inventory analysis

This approach uses consumers much like is done in focus groups. It arises out of a recognition of the difficulties involved in need forecasting, this need being emphasized by marketers as a new

product opportunity identifier.

The problem with need forecasting is the fact that it is difficult to measure consumer needs as most consumers are unable to relate or verbalize what needs they have. Tauber (1975) proposes problem inventory analysis as an alternative to generating new product ideas on an ad hoc basis and then testing consumer responses to these ideas.

Rather than presenting the consumer with a product or category and asking him to identify problems he experiences with that product, problem inventory analysis provides the consumer with a list of potential problems (e.g. "The packaging of the product is inconvenient.") and asks, for each, what products come to mind as having that problem. This is based on the assumption that it is easier for consumers to relate known products to suggested problems than it is to generate problems for a given product.

The limitations of this approach lie in the fact that while consumers may admit a product has a problem, that problem may not really constitute a significant inconvenience to them or may not be even slightly important to them. It is for this

reason that product problems identified should be seen as clues which require further investigation.

Before concluding this discussion on the generation of new product ideas it is necessary to devote some attention to the influence that the marketing concept of consumer orientation has on idea generation.

2.2.3 Idea generation and the marketing concept

It has been suggested that the adoption of the marketing concept may result in an increased reliance on customer-oriented sources for new product ideas which may lead to a proliferation of imitative products at the expense of breakthrough innovations.

Lawton and Parasuraman (1980) conducted a study in order to evaluate this suspicion and found that the adoption of the concept is not necessarily an impediment to the development and introduction of breakthrough innovations.

Hayes and Abernathy (1980), on the other hand, are of the opinion that businesses are adhering too closely to the concept of consumer orientation. They hold this factor to be responsible for the current malaise of American business. While they agree that new products should not be launched without the undertaking of a

market analysis, they say that consumer analyses and formal market surveys should not dominate all other considerations when allocating resources to product development. They believe technological advancement to be of equal importance. The former should therefore not take preference over the latter and concentration on the consumer orientation concept should not occur at the expense of technological advancement.

Hayes and Abernathy quote two Canadian researchers as saying:

> "Inventors, scientists, engineers and academics, in the normal pursuit of scientific knowledge, gave the world in recent times the laser, xerography, instant photography, and the transistor. In contrast, worshippers of the marketing concept have bestowed upon mankind such products as new-fangled potato chips, feminine hygiene deodorant, and the pet rock...".
>
> (1980:71)

This illustrates the opinion that marketers are providing consumers with products other than those innovations which they ought to be providing to keep up with the advancement of society. The problem with the consumer concept is the fact that while consumers may know what their needs are, they are often only able to define them in terms of existing products and markets.

While the foregoing concerns itself with the possibility of losing innovativeness through implementing the marketing concept, the following deals with the other side of the coin, namely the possibility of failure of new products due to a lack of application of the marketing concept and a concentration on technology.

Pilditch, in 1981, said that Britain was failing to hold its own against foreign competition despite the inventive genius of the British people. This he attributed to the "technology push" taking precedence over the needs of the consumer. In his own words, he says "industry should put the demands of the consumer first rather than an abstract pursuit of technological development". (1981:20)

In further explaining this, he says that

> "A brilliant invention, a technological breakthrough, employs no-one for long, fights no competitors, earns no foreign revenue unless it satisfies the needs and wants of customers."
>
> (1981:22)

While Zarecor (1975) calls for product planning to start with the marketplace, it would appear from the above that new product ideas must be obtained both from

within the organisation (in terms of factors such as technology) and from the external environment (in terms of the consumer needs). It is the task of marketers to achieve and maintain a balance between these two sets of forces in their product development efforts.

Having given consideration to the generation of new product ideas, it now becomes appropriate to divert our attention to the screening of these ideas.

2.3 IDEA SCREENING

While it is the objective of the idea generation stage to generate as many new product ideas in the company's fields of interest (as prescribed in the product innovation charter) as possible, the opposite applies to this stage. The primary objective of the screening stage is to eliminate those ideas which are not compatible with either the company's resources or objectives.

This stage is of crucial importance to the success of the overall new product development program since, as put by Wind,

> "... a failure to eliminate a poor idea may result in unnecessary costs and the diversion of resources from more promising ideas. Similarly, the deletion of a promising idea may be associated with a lost opportunity cost."
>
> (1982:276)

Kotler (1972 and 1986) refers to the former as GO-error and the

latter as a DROP-error. If a company makes too many DROP-errors, it would appear that its standards are too conservative while if it makes too many GO-errors, the resulting products will produce disappointing profits.

Product development costs rise substantially at each successive stage and poor ideas should therefore be eliminated as early as possible. Poor products should, furthermore, be eliminated during this initial screening stage as, if they are not eliminated, it becomes difficult for management to abandon them at later stages after much time and money have been invested in them.

A number of procedures for managerial screening are presented in the literature (Cafarelli, 1980; Hisrich, et al., 1978; Wind, 1982). All of them are fairly similar, normally consisting of a number of criteria, each of which is assigned a weighting. Each concept is then evaluated in terms of these criteria and for each, a desirability index is arrived at. The initial screening should not rank ideas but should rather sort them into acceptable and unacceptable ideas. To further sort the initially acceptable ideas into priority categories more information must be collected and project interdependancy considerations must be taken into account.

An example of a product-idea rating device appears in Figure 3.9.

PRODUCT SUCCESS REQUIREMENTS	(A) RELATIVE WEIGHT	(B) COMPANY COMPETENCE LEVEL .0 .1 .2 .3 .4 .5 .6 .7 .8 .9 1.0	RATING (A × B)
Company personality and goodwill	.20	✓	.120
Marketing	.20	✓	.180
Research and development	.20	✓	.140
Personnel	.15	✓	.090
Finance	.10	✓	.090
Production	.05	✓	.040
Location and facilities	.05	✓	.015
Purchasing and supplies	.05	✓	.045
Total	1.00		.720*

FIGURE 3.9 KOTLER'S PRODUCT-IDEA RATING DEVICE

(1986:341)

The literature suggests that each organisation should design its own form containing criteria which are most pertinent to its own set of circumstances. It must also be remembered that the checklist is not designed to make the decision for management, rather it serves as a more systematic approach to product idea evaluation and the basis for discussion.

The idea screening stage then, serves as a large sieve to eliminate ideas which are clearly incompatible with either the firm's resources, or its objectives. Those ideas which appear

to be compatible with these factors pass on to the next stage in the new product development process, namely the concept development and evaluation stage.

2.4 CONCEPT DEVELOPMENT AND EVALUATION

At this stage it is appropriate to distinguish between product ideas, product concepts and product images. Kotler makes this distinction in the following manner:

> "A product idea is an idea for a possible product that the company can see itself offering to the market. A product concept is an elaborated version of the idea expressed in meaningful consumer terms. A product image is the particular picture consumers acquire of an actual or potential product."
>
> (1986:341)

Consumers do not buy a product idea; they buy a product concept. It is therefore the task of the marketer to develop new product ideas into alternative product concepts so as to be able to evaluate their relative attractiveness to customers and thereby choose the best one.

According to Cafarelli (1980), the development of the product concepts from the product ideas can be done in a form that has a simple visual and a verbal statement that contains the following:

* a statement of the problem that the product is mean to solve,

* a definition of the type of solution that the product provides, and
* the necessary physical and communicative supporting attributes that lend credibility to the product's ability to solve the problem.

The product concept evaluation by means of a consumer analysis is essentially an attempt to determine not only the consumer reaction to the concept but also the number of exiting market segments and their characteristics as well as the relevant competitive setting of the given concept.

There are two stages in the consumer evaluation of the product concepts. These are, according to Cafarelli (1980), the qualitative refinement of the concept and the quantitative refinement of the concept, as may be seen in Figure 3.10.

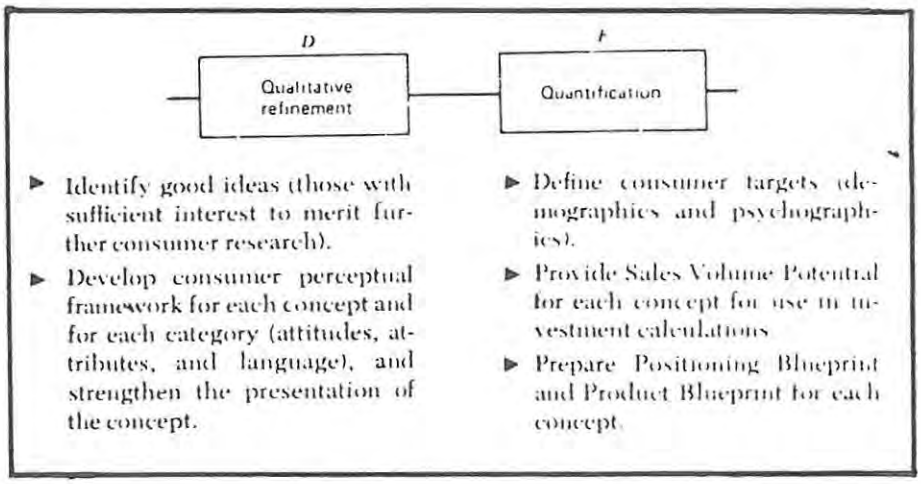

FIGURE 3.10 STAGES IN THE REFINEMENT OF THE PRODUCT CONCEPT (Cafarelli, 1980:109)

Each of these stages will now be considered in turn.

(a) The Qualitative Refinement

This step represents an attempt to accomplish the following:

* to identify those concepts that have the most consumer interest,
* to identify and discard ideas which are obviously weak, and
* to determine how the consumer views the category with which the marketer is dealing.

The latter deals with the gaining of an understanding of consumer attitudes and the language they use to express their thoughts, as well as what they see as important product attributes in the category.

The technique generally used in this step is that of a focus group interview which represents "... nine to twelve people who are representative of the potential customer for the type of product that you are researching". (Cafarelli, 1980:116) They may take on many forms but generally involve the leader introducing the consumers to the idea of sitting around and talking about new product concepts. The members are given an opportunity to indicate their likes, dislikes, thoughts and feelings for each new product concept.

(b) The Quantitative Refinement

This step enables the concepts to be defined more specifically for the future product and communication development, and enables them to be assessed as business propositions.

More specifically, the objectives of this step are as follows:

* to allow preliminary sales volume estimates to be made,
* to identify the demographic and psychographic characteristics of the potential consumer for each concept,
* to provide the marketer with a positioning blueprint that will aid in the development of communications, and
* to provide the marketer with a product blueprint that will direct the product development.

The techniques used vary from representative mail panels to personal in-home interviews and shopping mall intercepts, but the general procedure used is more or less standard.

The respondents are exposed to the concept board and asked to provide their assessment of its positive and negative benefits. They are then presented with an attribute list and asked to rate each in terms of its significance to them

as a consumer. They are also asked demographic and psychographic questions and are afforded the opportunity to actually try the product. In a follow-up situation, frequency-of-use questions and repeat-purchase questions are asked.

The data obtained from such interviews are then subjected to various statistical techniques which enable the determination of the relative sales potentials, the form the product must take and the key elements of communication.

The product concept evaluation by consumers is absolutely essential since it determines the market's reactions to product concepts and it also provides the marketer with valuable information for those acceptable concepts which will be developed further. Since it is a relatively expensive analysis to conduct it is advisable that those ideas which clearly have no potential be eliminated during the preceeding stage.

The essential output of the product concept evaluation stage are the positioning blueprint and the product blueprint for each acceptable concept. The product blueprint provides the marketer with specifications for the product to be developed. Since it is based on a consumer analysis, the specifications should include those features and characteristics desired by the consumer. The positioning blueprint, on the other hand, contains valuable information for the development of the

promotional mix, as well as the development of the marketing communications.

Once the new product ideas have been developed into new product concepts and have been evaluated by means of a consumer analysis, the marketer's next task is to conduct a business analysis on those new product concepts. This leads us to the following stage in the new product development process.

2.5 BUSINESS ANALYSIS

This stage represents an evaluation of the business attractiveness of the proposal. While some of the criteria under consideration may have entered the idea screening stage, they receive far greater attention at this stage and the evaluation is of a more objective nature.

A business analysis refers essentially to the ability of a company to realize the potential of a promising product concept. There are a number of criteria to be considered when conducting a business analysis. Briefly, these are as follows:

(a) Marketability

This refers to the ability of the company to successfully promote, distribute and sell the proposed product. In ascertaining the marketability of the product, the following types of questions have to be considered:

* Is the company able to secure the support of the appropriate distribution channels?
* Does the new product complement and enhance the existing product lines?
* Does the product lend itself to the kind of promotion and advertising that the company does best?
* Can the current sales force handle the new product?

(b) Production compatibility

In assessing whether the new product is compatible with the company's current production resources, consideration must be given to not only whether the necessary equipment is available but also whether the company possesses the required knowledge and personnel for the product's production. Furthermore, management must also determine whether the raw materials needed for the production of the product would be available.

(c) Compatability with company goals and policies

This should be an overriding consideration. It must be ascertained whether the production of the proposed product would in fact contribute to the achievement of the company's long-term goals. Failing this, it may occur that the resources used to develop and market the product may have been better employed elsewhere to promote the achievement of company goals.

The product must also not be in conflict with the company's social responsibility policies. As such, it is necessary for management to conduct a societal analysis of the product at this stage.

It is today common knowledge that a company does not operate in isolation of its wider society. It not only takes from and give to society, but it also influences and is influenced by society. As such, business decisions cannot be made without giving regard to society. This is no less true of decisions involving new products to be marketed to the consumer who forms part of society.

Udell, et al., recognise this when they say "in view of the social responsibilities of business, the consumer movement, and continuing conservation and ecological concerns, all product proposals should be subjected to a societal analysis". (1981:246)

Society is not likely to tolerate products that generate large quantities of pollution, endanger the users of the product or promise some other disutility to society. In evaluating new product proposals, management must therefore ensure that potential products will not be a burden to society but rather a useful asset.

Furthermore, societal awareness provides a stimulus for new product development in itself. One such example is the introduction of biodegradable containers. It cannot be denied that there are exciting prospects for potential new products which have environmental or other social advantages relative to the products they may displace.

No matter the specific approach a company takes in conducting a societal analysis, it will in effect be analysing the social costs and benefits likely to be generated by the production, consumption and disposal of a proposed product.

(d) Financial compatibility

The company must ensure that it has sufficient financial resources to produce and market the product. It must furthermore determine whether the proposed product offers adequate economic promise. This requires that an economic analysis be undertaken.

There are at least six major elements of an economic analysis, these being as follows: costs, revenues, profits, tax considerations, uncertainties and synergistic effects.

As a result of the elements being hard variables by nature, the analyst is forced to make assumptions about them. Cunningham, et al., say that "although some people find this

step uncomfortable, the alternative of not estimating a product's profit potential prior to the test market stage is unwise". (1981:263)

It is essential that management maintains a consumer orientation during this stage. (Udell, et al., 1981) This is particularly so since factors such as demand and supply enter the considerations. Wind (1982) in fact suggests that the results of the consumer evaluation of the new product concepts should be combined with the cost estimates when considering the concepts viability and profitability.

Cunningham, et al. (1981), present two ways to conduct an economic analysis. These are as follows:

* Development of a pro forma income statement

  In order to construct such a statement it is necessary to estimate the expected revenues and costs. The former in turn demands an estimate of the sales potential and volume of the concept. This, while being very difficult, may be done with the aid of information generated from the consumer evaluation analysis.

  The pro forma income statement permits the analyst to determine whether the expected profit is sufficient for

the product concept to proceed in its development.

* Market share projections

Market share analysis involves tying a product's break-even point to the existing industry sales for the product. Cunningham, et al., define the break-even point as "... the point at which the incoming revenue from the product pays all fixed and variable expenses but does not generate any profit for the firm". (1981:264) That is to say, it is the point where total revenue is equal to total costs.

Obviously, the higher the industry market share required for the product to break even, the smaller are the chances of the new product succeeding.

The primary difficulty with this approach is that it requires an existing product to serve as the basis for comparison. As a consequence, market share analysis is not of much use in the case of a truly innovative, new product.

A further difficulty lies in the fact that such an analysis tends to be conservative in that it assumes that the new product will only obtain a share of the existing market. That is to say, it assumes that all sales will be at the expense of competition and does

not therefore consider the possibility of market expansion which may occur as a result of the new product.

Besides determining whether a potential product will provide an adequate return on investment, it is suggested that a product proposal should pass an opportunity cost evaluation. This refers to that which must be forfeited to pursue the production of a particular product.

Once the business analysis has been concluded, the marketer will be left with one or two viable product concepts, the others having been eliminated in one of the preceeding stages. Those product concepts which have been found to be acceptable, even after the business analysis, pass on to the following stage, being the development of the marketing strategy.

2.6 DEVELOPMENT OF THE MARKETING STRATEGY

The basis for the development of the marketing strategy will be contained in the product blueprint and the positioning blueprint prepared in the concept development and evaluation stage. According to Wind, the marketing program, which contains the marketing strategies for a new product, "... involves explicit decisions concerning the various components of the marketing mix - pricing, promotion, advertising, and distribution". (1982:377)

Kotler (1986), on the other hand, goes further than this. He is of the opinion that the marketing strategy consists of three parts. The first part describes not only the size, structure and behaviour of the target market, but also the planned product positioning and the sales, market share, and profit objectives of the product over the first few years.

The second part refers to those factors described by Wind as constituting the marketing strategy components. That is to say, it is an outline of the products planned price, distribution strategy and marketing budget for the first year of the product's existence.

Finally, the third part of the marketing strategy deals with the planned long-run sales and profit goals as well as the marketing mix strategy over time.

The marketer must ensure that the marketing mix developed for the product is consistent with the new product development goals and he must also ensure that the components of the mix are consistent with one another. For example, one would not expect to find an inexpensive necessity being distributed through a luxurious speciality outlet.

Once the marketer has given consideration to the development of a marketing strategy for the new product concept, the new product developments efforts may be converted to making that product

concept a reality. This takes us to the seventh stage in the suggested new product development process, namely that of the development of the product itself.

2.7 PRODUCT DEVELOPMENT

This stage in the development of a new product calls for a large increase in investment. The primary objective of this stage is to test the ability of the firm to manufacture the product to match the selected concept at an acceptable cost level. If the company fails to translate the product concept into a technically and commercially feasible product, the accumulated investment in that idea will be lost.

The development of the product is normally carried out by the research and development department and although the developmental activities are the responsibility of the engineering and technical research personnel, their activities should constantly be guided by marketing and financial considerations. This is emphasized by Udell, et al., who state that "marketing management must be intimately involved in order to ensure that the developing product does conform to needs and desires in the marketplace". (1981:252)

Product design decisions encompass all aspects of the extended product including the actual product features, packaging, brand name, and associated services. These four sets of decisions

are closely interrelated and should be integrated into a total system which is consistent with the product benefits desired by the market.

According to Wind (1982), there are four sets of factors which should be considered when making product design decisions. These are as follows: corporate marketing objectives, corporate constraints, environmental constraints and the customer profile.

A summary of the interrelationships between the new product design decisions, the primary set of considerations involved in making them, and the key decision makers is presented in Figure 3.11.

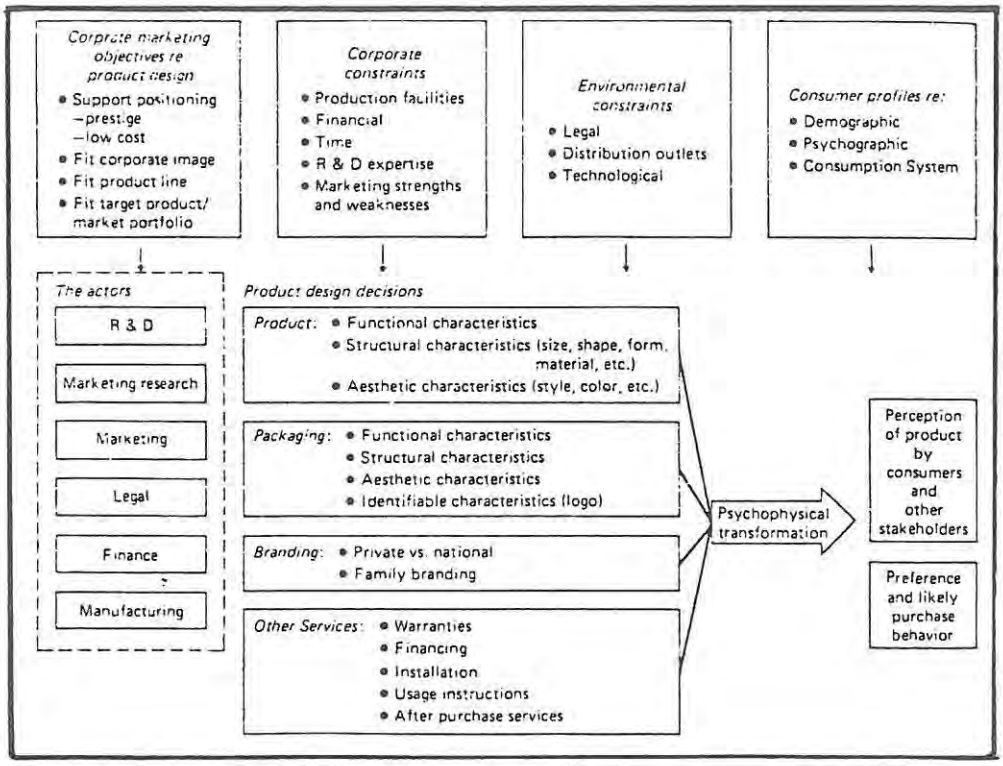

FIGURE 3.11 PRODUCT DESIGN CONSIDERATIONS (Wind, 1982:340)

Consideration will now be given to each of the four product design decision areas as contained in Wind's diagram.

(a) Physical product features

Cafarelli (1980) says that the product blueprint should be submitted to the research and development department to request the start of a new assignment. Such a blueprint should include things such as the target costs of goods, a description of the customer and a list of product attributed which, through research, have been found to be central to the product. The latter should be assigned numerical weights to indicate their relative importance. This aids in the development of the physical product features.

When making decisions as regards the physical product features, choices have to be made among numerous functional, structural and aesthetic characteristics.

Functional characteristics are related to the benefits expected from the product. For example, a raincoat must quite obviously be waterproof. It is the development of new functional characteristics that challenge technical skills and it is often in this area where research and development breakthroughs occur.

Structural characteristics, on the other hand, relate to the way in which the functional characteristics are delivered,

and include qualities such as size, shape, colour, odour and material. Minor structural differences often serve as the basis for the development of a number of related products within a product line.

Finally, aesthetic characteristics involve both the actual design, shapes and colours used and the other less clear-cut 'ornamental' features which together help create an appealing product which is visually attractive and distinct.

(b) Packaging

The packaging of a product is an integral part of the product itself. It is especially important in markets where products are homogenous as it serves as a basis for the differentiation of the product.

While packaging has useful promotional and communicational components, it also has an informational content as it often displays usage instructions.

There are a wide range of decisions to be made when designing packaging. For example, it must be ensured that the packaging is convenient for both consumers and distributors and it must be easily disposable.

(c) Branding

Wind refers to branding as "... the use of a brand name, a

term, a symbol, a design, any combination of the above, or any other means used to identify goods and services of one seller or a group of sellers and to distinguish those from those of competitors". (1982:365)

The branding decisions are closely related to the product positioning the company desires and the overall marketing program for the product. This is especially true for the selection of a brand name.

(d) Associated services

There are a number of associated services which constitute an important, integral or optional part of the product bundle consumers buy. Amongst these are factors such as warranties, money-back guarantees, credit and financing, and maintenance contracts.

It must be remembered that many of the decisions as regards these factors require coordination with other business functions and are, as such, not within the sole domain of the new product management team.

As is apparent, product development does not only concern itself with the physical product, but rather with a wide variety of concerns. This is so since the product is not merely a physical entity but a host of tangible and intangible factors directed at satisfying the consumer.

Once the product has been successfully developed, a system must be designed for the continuous evaluation of the product's performance. The latter constitutes the eighth stage in the recommended new product development program.

2.8 DESIGNING A SYSTEM FOR CONTINUOUS EVALUATION

The objective of this stage is to develop a monitoring system before the product launch, to facilitate the continuous evaluation of the product's performance as well as the changing environmental factors. While the marketing strategy was developed in the sixth stage of the new product development process this stage represents the development of a system for continuously evaluating the implemented strategy. The monitoring system should ideally provide guidelines for the changing of the marketing strategy, the repositioning of the product or even the elimination of the product from the product line.

Wind (1982) suggests that the system should involve three interrelated programs. These are as follows:

(a) an adaptive experimentation philosophy which allows for the continuous assessment of the performance of various marketing strategies,

(b) the continuous monitoring of stakeholder's attitudes towards both the firm and the product as well as their perceived

positioning of the product and their changing needs and problems, and

(c) an ongoing economic evaluation of the product's performance.

Once a product has reached this stage in the new product development process, it is ready for test marketing, the ninth stage in the process.

2.9 TEST MARKETING

Udell, et al., define test marketing as "... the limited introduction of the product to some segment of the actual market". (1981:254)

This approach to testing a product affords the consumer the opportunity to express his product preferences in the actual market environment.

There are a number of objectives of the test marketing stage. The major ones are as follows:

* to allow management to become aware of any problems with the product in the market place by experimenting with alternative characteristics of the new product (Hisrich, et al., 1978),

* to enable the forecasting or prediction of national sales by

the projection of sales results from the test market areas (Hisrich, et al., 1978; Udell, et al., 1981),

* to indicate product weaknesses which may have, up until this stage, escaped attention (Udell, et al., 1981),

* to pretest alternative marketing plans (Udell, et al., 1981),

* to test the product and communication plan as a whole and not as two separate entities as they are tested prior to the test market (Klompmaker, Hughes and Haley, 1976),

* to measure the extent of the trade's acceptance of the product, the strategy and the communication plan (Klompmaker, et al., 1976), and

* to generally provide a richer understanding of the potential market for the product, including possible market segments (Udell, et al., 1981).

Having considered the objectives of test marketing, it now becomes appropriate to divert some attention to the procedure employed when conducting a test market.

Hisrich, et al., present a test marketing procedure. This procedure is represented in Figure 3.12.

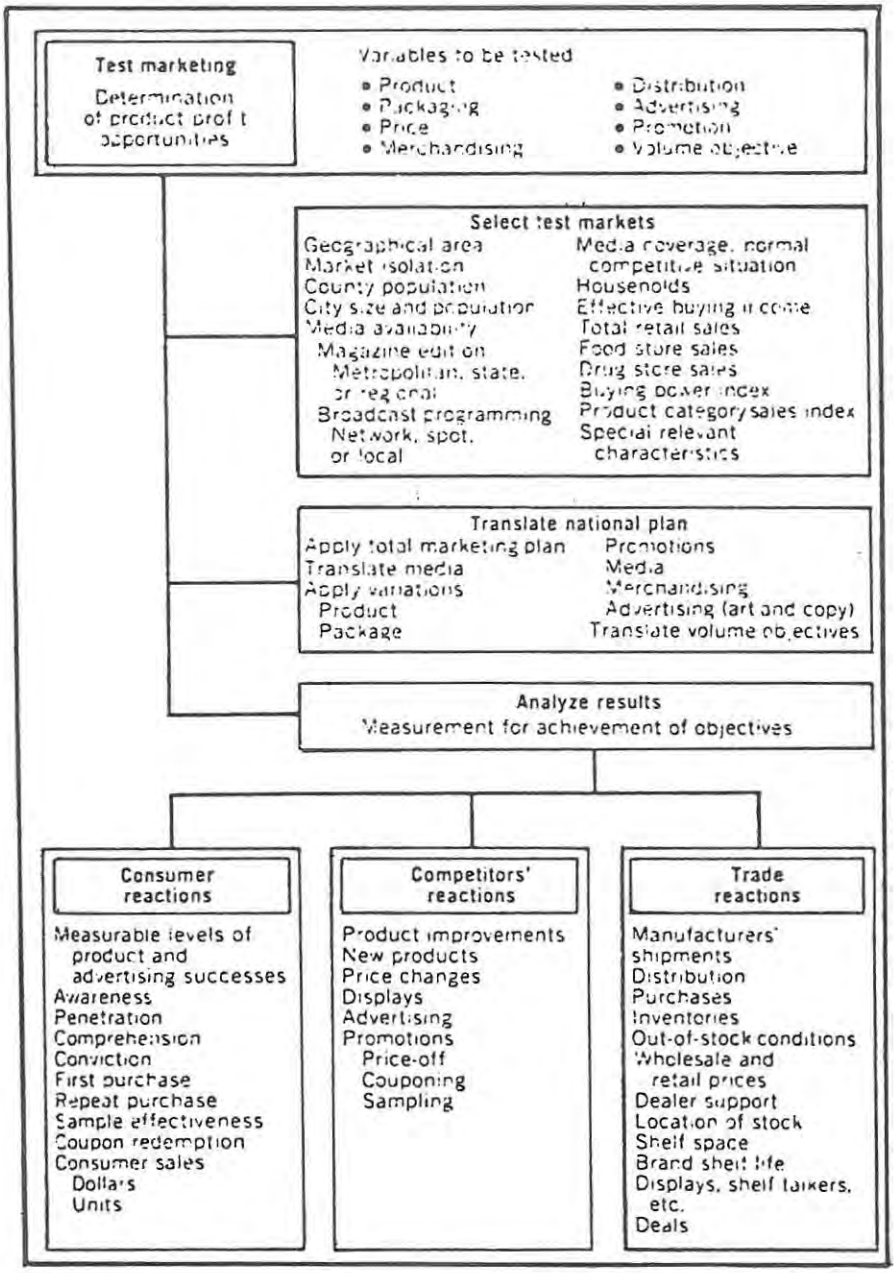

FIGURE 3.12 THE TEST MARKETING PROCEDURE (Hisrich, et al., 1978:110)

While the diagram is largely self-explanatory, it is necessary to emphasize some factors. Firstly, in selecting a test market, an area that can be controlled as much as possible must be chosen so that an approximation of the national market is obtained in order

to provide a basis for prediction. Furthermore, in choosing the market size, management must ensure that the number and type of distribution outlets used is adequate to represent the entire market.

Consideration must also be given to a variety of factors which may distort the test market results. Firstly, the general level of business and economic activity must be considered as this affects the readiness of consumers to buy and their evaluation of the new product. Secondly, the market structure must be analysed. This refers to not only the number but also the types of competitive products as well as the degree of competition. Finally, the originality and the appeal of the presentation must be given some consideration as these factors can affect the test market results. Management must ensure that they test only those new product variables desired and not other elements which may interfere with results.

At surface level, test marketing appears to represent a most desirable manner of testing a new product. However, test marketing is not without its problems. While it is in effect a "dress rehearsal" for the national launch, there are a number of potential weaknesses in this approach. These are as follows:

(a) The results of a test market are not always guaranteed as being reliable. In fact, Hisrich, et al., (1981), state that many new products which achieve favourable test market

results do not turn out to be commercial successes.

(b) Test marketing is expensive to conduct. Besides the cost of employee time there is also a high per unit cost when a modest number of units are produced.

(c) It is very difficult to determine the nature of purchases. That is to say, management has no way to determine whether sales represent first-time purchases or repeat purchases. This represents a weakness as such information is vital to the marketer when testing a product.

(d) There is a possibility that a product which has failed during a test market will cause the company name to be associated with failure.

(e) The delay in the national launch affords competitors the opportunity to react by producing a substitute product which may represent an improvement on the product being test marketed. There is in fact a paradox inherent in the time factor of test marketing. Hisrich, et al., in support of this, state the following:

> "... if the market test period is too short, national distribution strategy may be based on inaccurate, incomplete or inconclusive data. If a new product is tested for too long a time, competition may be able to respond with a substitute product."
>
> (1978:126)

(f) Competitors are in a position to negate the test market results by distorting them. This they are able to do by, for example, increasing their promotion or lowering their prices for the duration of the company's test market.

Since management's recognition of these weaknesses, a number of alternatives to test marketing have been developed, one of which is laboratory simulation. With such an approach, a sample of consumers are exposed to test commercials and are given the opportunity to shop in a simulated supermarket environment. Follow-up interviews after home use are then used to measure product satisfaction and intentions to repurchase. The data collected is then fed into mathematical models which enable the prediction of market shares.

While a number of mathematical models are available for use, two of the most common ones, according to Narasimhan and Sen (1983) are SPRINTER and NEWPROD. The former traces the consumer adoption process carefully and considers the effects of marketing mix variables explicitly, while the latter examines the effect of marketing mix variables in determining the consumer acceptance of a new brand.

The choice of the marketer is whether to test market or not, or to use mathematical models or to perhaps use them both. Kotler says "... the decision to test market is related to the degree of confidence the manufacturer has in the new product". (1972:495)

Thus is the marketer is totally confident that his new product will be successful, he should choose not to test market. However, if there is a great deal of uncertainty as to the product's probable success, he should either conduct a test market or make use of the available mathematical models.

The marketer will thus either launch nationally immediately after product development or he will launch nationally if the test market results are favourable. This national launch, then, is the next new product development activity requiring attention.

2.10 PRODUCT INTRODUCTION AND COMMERCIALIZATION

The commercialization stage of new product development begins with the completing or revising of the new product's brand, packaging and promotion strategies in the light of the test market findings. A number of activities have to be carried out during this stage. These include things such as the training of salespeople and dealers, the development of promotional campaigns, the supplying of distribution channels with inventory and the setting up of production facilities.

The timing of these launch activities are crucial and must therefore be carefully planned well in advance of the launch itself. Ideally, the company should work backwards from the desired launch date and set deadlines for the completion of the necessary activities. This also forces management to carefully

consider the coordination of these activities.

It may be noted that products are often "rolled out" regionally rather than being launched nationally. Such a strategy requires a great deal of logistical coordination but is sometimes necessary, especially if the company's resources do not permit the launch on a "crash basis". If the product is rolled out, it is generally introduced into the prime markets first and then gradually into the secondary and tertiary markets. The rate of such planned market expansion is governed by a number of factors such as the test market results, the occurrence of competitors entering the various markets and the ability of the company to expand its production facilities and train its sales force.

No explicit prescriptions for the commercialization and launch of new product have been made. The reason for this lies in the fact that this stage of product development will depend very heavily on the nature of the product and its markets. As such, the procedure adopted will vary from company to company as well as with each unique set of circumstances. Furthermore, the occurrences in the previous stages of product development will serve to dictate what activities need to be carried out and how they are to be carried out in this stage.

Essentially, though, management has to make decisions in four areas. These are, according to Kotler (1986), the timing of the launch, the geographical strategy of the launch, the target

market prospects and the introductory marketing strategy. It would however appear desirable to have finalized the last two decision areas earlier in the new product development process. For example, the target market should ideally have been defined during the concept evaluation stage and the marketing strategy should have been developed during the previously presented development of the marketing strategy stage. The latter may, however, require revision in the light of the test market findings.

Having given consideration to the various stages in the suggested new product development process, it now becomes appropriate to divert our attention to the use of marketing models in new product development. The discussion of such models has been reserved until now since their application is widespread over the new product development activities.

New product forecasting models forecast the success of potential new products. They provide management with a set of estimates of the total volume that would be bought by each market segment with defined environmental conditions and under a set of alternative marketing plans.

Many types of new product forecasting models have been devised. A framework for the classification of the models enables one to appreciate the vastness of the potential uses for these models. Such a framework is presented in Figure 3.13.

A. Purpose of model

Forecasting of aggregate market demand vs. trial or repeat purchase forecast

First purchase models vs. repeat purchase models

Prediction vs. prediction and diagnostics

Forecasting of total sales vs. weekly, monthly, quarterly, or annual sales

B. Type of products and services

Frequently purchased vs. infrequently purchased (durables, . . .)

New product vs. new brand in an established product class

Consumer vs. industrial products and services

C. Unit and Level of Analysis

Unit: Individual vs. household
Consumers vs. units bought

Level: Market segment vs. total market

D. Format of model

Diffusion vs. adoption/behavioral models

Deterministic vs. stochastic

E. The dependent variable

Type of variables:

Brand choice (trial) vs. frequency of purchase (repeat) vs. quantity purchased

Brand sales vs. brand share

Number of variables:

Single vs. two or more

Type of scale

Nominal-ordinal-interval-ratio-mix

F. The independent variable

Type of variables:

Time

Marketing variables—price, deals, advertising, etc.

Customer characteristics—situation specific (attitude, awareness, etc.) vs. general customer characteristics

Competitive activities

External environmental forces

Number of variables:

Single vs. two or more

Type of scale:

Nominal-ordinal-interval-ratio-mix

G. The required data

Type of data

Primary data vs. historical data on similar products (analogy)

Consumer response to actual product vs. response to concept description

Consumer responses vs. sales data

Test market vs. pretest market with an existing product (in-home use test, . . .)

Panel vs. nonpanel data

Data collection procedure—telephone, mail, personal

Number of observations required

Time and cost of data collection

Representation of sample

H. Analytical procedures

Simulation vs. analytical procedures

Parameter estimation across product classes vs. within a product class

One step vs. multiple-step approach

FIGURE 3.13 A FRAMEWORK FOR THE CLASSIFICATION OF NEW PRODUCT FORECASTING MODELS (Wind, 1982:437)

In the earlier stages of product development, such as the concept testing stages, the forecast will, by necessity, be tentative and broad. However, as management narrows its product options and obtains more data, the forecasting task becomes more precise and

narrows the range of likely results.

At the concept evaluation stage, the data bases in the models consist of management's subjective estimates and analogies. If this initial evaluation suggests potential in a proposed concept and a consumer based concept evaluation study is carried out, the next forecasting model to be used would be one based on the data generated in the concept testing study.

If the data from such a model is favourable, a simulated test market model may be employed which may in turn serve as the basis for a pre-test market forecasting model. After the actual test market has been conducted, the data obtained may be used as the basis for a test market based forecasting model. Finally, once the product has been introduced to the market, early sales results can be utilized as the basis for an early sales based forecasting model.

The above, illustrates the wide application of new product forecasting models.

A detailed discussion on the many forecasting models available lies beyond the scope of this dissertation but for illustrative purposes the NEWPROD model may be mentioned. This represents a consumer based repeat purchase and share forecasting model. It can be used to predict new product success before an expensive test market is undertaken and it allows the marketing manager to

determine the sensitivity of input variables because various combinations of key decision variables can be used.

It must be emphasized that new product forecasting models, although relatively new to marketers, are most valuable to new product development activities and they may be used at various stages of the new product development process, depending on the needs of the marketer.

While attention has thus far been placed on the internal development of new products, sight must not be lost over the fact that a firm may also extend its product line by external acquisition. This option was also represented in the model for new product development presented earlier in this chapter but it does not require the in depth discussion afforded to internal development. The reader may recall that external acquisition was presented as an alternative venture strategy in Chapter 1.

3. CONCLUSION

The new product development process has been treated as having a specific "end point" in this chapter. The fact of the matter is, however, that product development never really ends. Udell, et al., emphasize this by stating the following:

> "Future product development efforts will concentrate on improving the 'baby', further developing it into a mature product that better meets the needs of

customers and increases the product's profitability."

(1981:257)

Thus, while product development and evaluation continues throughout the life of the product, there may merely be a shift in responsibility for product development from the new product development team to the product or brand manager. Any major proposed changes in the product or new product ideas may then be referred back to the new product development team.

The new product development activities have been presented in a sequential approach during the course of the current chapter. It may, however, be noted that speed and flexibility are becoming more and more essential in new product development in view of today's fiercely competitive environment. The traditional sequential approach simply does not allow for the required speed and flexibility, Takeuchi and Nonaka (1986) propose instead the using of a holistic approach in the development of new products.

They liken the holistic approach to a game of rugby where the ball gets passed within the team as it moves as a unit up the field, unlike the sequential approach which they liken to a relay race.

The holistic approach requires that the necessary new product development activities occur simultaneously rather than sequentially. As such, the process should be seen as a dynamic

one and requires much reliance on trial and error.

The above must be borne in mind when considering the new product development process which is recommended in this chapter.

The current chapter, together with the preceeding chapter, serves as a literature review of the subject matter of this thesis. This review of the literature enables the formulation of propositions in the research area.

Having laid the necessary theoretical foundation, Chapter 4 will serve as a discussion of the methodology employed in this research.

CHAPTER FOUR

METHODOLOGY

CONTENTS

1. INTRODUCTION

This chapter serves as a guide to the research plan since it presents the propositions, the population and the sampling method, the method of data collection and the method of data analysis.

2. THE RESEARCH PROBLEM REVISITED

This study represents an investigation into the dimensions underlying the success and failure of new consumer products in South Africa.

There are two subproblems related to the main research problem. These are as follows:

(a) What factors serve as success/failure discriminators for consumer products launched onto the South African market?

(b) Is there any correlation between organisation size and new product development organisational structures employed?

Having restated the above, it is now possible to present the research propositions.

3. THE RESEARCH PROPOSITIONS

Since the propositions are formulated in relation to the subproblems, they will be presented and discussed under each subproblem.

3.1 SUBPROBLEM ONE : What factors serve as success/failure discriminators for consumer products launched onto the South African market?

The large number of factors serving as potential success or failure discriminators (63) and the exploratory nature of the research precluded the making of individual and detailed hypotheses. Instead, general propositions were developed.

On the basis of the literature review, the general propositions are as follows:

Successful products or projects are expected to be those

(i) which are superior, have a differential or economic advantage, or are unique relative to competing products

Sub-sections 2.2 and 3.2.3 of Chapter 1 emphasized the need for new products to be, at the very least, at parity with competing products. This suggests that new products must be superior relative to competing products if they are to be successful.

(ii) where the elements of the commercial entity such as selling, distribution and production, are proficient

In sub-sections 2.5 and 2.7 of Chapter 3 it was suggested that proficient production is a prerequisite for successful new product development. Furthermore, it was also suggested, in sub-section 2.6 of Chapter 3, that the development of an appropriate marketing strategy is required for successful new product development. This incorporates the marketing mix elements, such as distribution.

(iii) where considerable technical and market knowledge is acquired

The need for market knowledge was stressed in sub-section 2.4 of Chapter 3, while the need for technical knowledge was stressed in sub-section 2.2 of Chapter 3 (where the researcher discussed research and development as a source of new product ideas), as well as in sub-section 2.4 of Chapter 1.

(iv) where the technical, marketing, and evaluative (process) activities are proficiently undertaken

The prescribed new product development process in Chapter 3 suggests that the activities contained within the process should be proficiently undertaken to facilitate successful new product development.

(v) entering mass, large, growing, dynamic, and uncompetitive markets, with a high but unsatisfied need for such products

The literature suggests that to be successful, new products must be launched into large, growing markets. It also suggests that companies should only enter markets if they are large enough to be viable, as stressed in sub-section 3.2.1 of Chapter 1. Furthermore, sub-section 2.6 of Chapter 1 stressed the potential gains of entering markets where the company is able to exploit available opportunities in respect of unsatisfied needs.

(vi) where a high degree of resource compatibility exists between the needs of the project and the resource base of the firm

As stated in sub-sections 2.3 and 2.5 of Chapter 3, new product ideas which are not compatible with the company's resources should be eliminated. This suggests that new products are more likely to be successful if their resource requirements are compatible with the company's existing resources.

(vii) which are familiar to the firm,

In both sub-sections 2.3 and 2.5 of Chapter 3, it was stressed that companies should restrict themselves to new product projects which possess synergy with their current operations. This suggests that new product projects which are not entirely new to the firm, but

rather are familiar to the firm are more likely to succeed.

(viii) which are market-derived

Sub-section 2.2.3 of Chapter 3 suggested that the consumer orientated policy of obtaining new product ideas from the consumers themselves may increase the likelihood of new product success since it ensures that there is a real consumer need for the product.

These propositions are consistent with those derived by Cooper (1979) for his research purposes.

3.2 SUBPROBLEM TWO : Is there any correlation between organisational size and new product development organisational structures employed?

On the basis of the literature review, the following propositions in relation to this subproblem emerged:

(i) Large companies employ the venture team, task force and/or the product manager new product development organisational structures

This proposition emerges from section 3 of Chapter 2 where guidelines for choosing new product development organisational structures were presented.

(ii) Smaller companies employ the new product committee form of new product development organisational structures

As with section (i) above, this proposition emerges from section 3 of Chapter 2.

Having revisited the research problem and presented the propositions, it is now appropriate to give some consideration to the research population and sample.

4. THE RESEARCH POPULATION AND SAMPLE

4.1 THE RESEARCH POPULATION

The population utilized for the purposes of this research may broadly be defined as South African manufacturers of fast moving consumer goods. More specifically, the population comprised all the business organisations included in the following categories of the Standard Industrial Classification of All Economic Activities (1981):

* canned and prepared meats and meat specialities, including meat soups, meat puddings and meat pies
* butter and cheese
* condensed milk and milk powder and other edible milk products, except ice cream, ices, etc
* ice cream, ices and other frozen milk desserts
* canned, preserved and dried fruit and vegetables; fruit and vegetable juices; fresh fruit cordials and squashes; jams and jellies
* pickles and sauces
* dried fruit
* canned and preserved fish, fish meal and fish oil
* compound cooking fats, margarine and edible oils

* instant breakfast foods
* bread, cakes and biscuits
* macaroni, vermicelli and spaghetti
* manufacture and refining of sugar; golden syrup
* chocolates, sugar confectionery and cocoa
* roasted peanuts, other nuts and popcorn
* coffee roasting, chicory grinding and tea blending and packing
* other food products (including pre-cooked meals for resale only, tartaric materials, baking powder, jellies, custards, pudding powders and refined salt)
* balanced animal feeds
* distilleries and wineries
* breweries
* aerated waters and soft drinks including syrups, but excluding establishments primarily producing fruit juices
* cigarettes, cigars, tobacco, snuff, etc
* soap, other cleaning compounds and candles
* perfumes, cosmetics and other toilet preparations

The population listing was obtained from the Bureau of Market Research's industrial directory which covers all manufacturing establishments in South Africa listed according to the Standard Industrial Classification.

The manufacturers of consumer goods in general, and fast moving consumer goods in particular, were the subject of this study,

rather than the manufacturers of industrial goods.

In describing industrial products, the following two comprehensive definitions are presented:

(a) Industrial products are

> "... products which are sold to commercial enterprises, government agencies and nonprofit institutions for use in the production of their goods and services or for resale to other industrial customers."
>
> (Cunningham, et al., 1981:223)

(b) Industrial products

> "... are either raw materials, to be processed or utilized in the production process such as chemicals, or operating supplies of items such as cranes or typewriters, or special supplies and services required by institutions or firms to carry out their day-to-day business activities."
>
> (van der Merwe, et al., 1975:143)

Consumer products, on the other hand, are defined quite simply as "... those goods and services destined for the ultimate consumer" (McCarthy, 1971:300), while fast moving consumer goods may be defined in the same manner as Aspinwall's category of red goods, namely "goods with a high replacement rate and a low gross margin, adjustment, time of consumption, and searching time" (Kotler, 1972:97).

Fast moving consumer goods were selected as the focus of this

research since consumer goods in general are far too broad a category and consumer goods include a diverse spectrum of goods varying widely in nature. The fast moving consumer goods category was selected since it was the researchers opinion that such markets are competitive and are characterized by frequent new product introductions. This affords the researcher the opportunity to obtain data which is recent and therefore has not been given to distortion over time, as may be the case with less frequently introduced new consumer products such as household appliances.

It may be noted that it is sometimes difficult to classify some products as being either industrial or consumer goods as some products considered as consumer goods may also be industrial if they are destined for use by intermediate customers. McCarthy (1971) is of the opinion that the type of customer who will finally use the product should determine whether it should be classified as being a consumer product or an industrial product.

The researcher is of the opinion that consumer and industrial products should be studied separately since the requirements for the successful development of industrial products are expected to be different to the requirements for the successful development of consumer products. This is thought to be so since industrial products differ from consumer products on a number of dimensions. For example, industrial products are typically of a higher technical nature than consumer products and the buyer behaviour

in consumer products' markets is quite different to that of industrial products' markets. With regard to the buyer behaviour in the markets, it may be noted that buying decisions in industrial markets are more likely to be made jointly than the buying decisions in consumer markets. Furthermore, industrial buyers are likely to be less price sensitive than consumer buyers.

It is furthermore felt that the problems encountered in the development of new consumer products should receive top priority attention since the development of such products tends to be of a more rapid and frequent nature than that of industrial products.

Having established the parameters of the research population, it now becomes necessary to describe how the sample for this research was selected from this population.

4.2 SELECTION OF THE SAMPLE FROM THE POPULATION

The total population was reduced to a refined population. This was necessary since an investigation of the population listing revealed the fact that it contained a number of small manufacturers of generic products where new product development activity is typically limited, if not non-existent. As such, bakeries and the manufacturers of products such as grain and vinegar (many of which were located in rural areas throughout South Africa) were excluded from the population.

Each member of the refined population was individually considered for inclusion in the sample and the sample size was dictated by those manufacturers eligible for inclusion.

The criterion employed in determining the eligibility of each member was the size of the organisation. This criterion was adopted since it is assumed that the size of the organisation determines how well developed its new product development function is.

The sample was, as such, intended to include a disproportionate share of the larger firms, reflecting their greater new product development involvements.

The method for the selection of the sample gave rise to a sample of 238 manufacturers to which questionnaires were sent. A list of companies included in the sample is contained in Appendix A of this thesis.

4.3 THE RESEARCH RESPONDENTS

Out of the 238 questionnaires which were mailed, 93 were returned. This represents a response rate of 39,08%. The 93 returned questionnaires provided data for 93 new products, 51 of which were classified as being successful new products and 42 of which were classified as being unsuccessful new products.

The fact that data for 93 new products was obtained from 93 questionnaire returns is incidental. That is to say, this does not indicate that each questionnaire provided data for one product. Rather, some questionnaires provided data for two products, other for one product, and some for no products at all. The latter indicated the companies inability to participate for one reason or another such as, for example, the company having not produced a new product over the preceeding ten years.

Having considered the research population and sample, it is now necessary to divert the attention towards the collection of the research data from the selected sample.

5. THE COLLECTION OF THE RESEARCH DATA

The discussion on the data collection is divided into three sections. These are the nature of the data required, the method of the data collection and the administration of the data collection.

5.1 THE NATURE OF THE DATA REQUIRED

It is necessary to discuss the data requirements since the nature of the data required dictates the method of data collection to be employed.

Many factors were found to be potential determinants of new

product performance. From the literature review, as well as a consideration of the South African set of circumstances, a total of 63 factors were included in the research. These factors represented the independent variables of the research.

In considering the South African set of circumstances when developing the factors, the following were taken into consideration:

(a) South Africa is a small, developing economy which has a dual nature in that it consists of a smaller White, Asian and Coloured population relative to its large, growing Black population,

(b) many companies in South Africa have parent companies overseas; and

(c) the power in the distribution channels of fast moving consumer goods in South Africa rests heavily with the major retailers.

For questionnaire construction purposes and to simplify the large number of discriminating factors, the factors were clustered into six groups. These were as follows:

(a) The commercial entity

This refers to the result of the new product process and includes the attributes and advantages of the new product, its price, the nature of the launch efforts, and the

production or manufacturing effort underlying the launch.

(b) Information acquired

The variables included in this block refer to the nature or quality of information acquired during the new product development process.

(c) Proficiency of process activities

This refers to how well activities were undertaken during the new product development process from idea generation to launch.

(d) Nature of the marketplace

The variables contained in this block relate to the characteristics of the new product's market and include factors such as its size and growth rate as well as the nature and intensity of competition in that marketplace.

(e) Resource base of the firm

This block of variables refers to the compatibility of the firm's resource base with the requirements of the new product project.

(f) Nature of the project

Included in this block are those variables relating to the characteristics of the new product project. Examples of such variables are the level and complexity of the required

technology and the innovativeness of the product.

These groups of factors are consistent with the groups used by Cooper (1979) in the grouping of his 77 factors.

In order to determine which of these factors were positively related to new product success, data was required not only for successful new products but also for unsuccessful new products.

The question of what constitutes a successful new product arises. For the purposes of the current research, a successful product was deemed to be a product which fulfilled company expectations. The onus was on the respondent to determine whether his or her new product constituted a success or a failure. As such, the measurement of success was related to the subjective opinion of the respondent.

While this may appear to be too subjective, there are a number of factors which constitute the rationale for using such an approach. Firstly, it is difficult, if not impossible, to obtain objective information such as returns on investments and market share data from organisations. The requirement that the respondent disclose such confidential information would decrease the response rate markedly. Secondly, even if objective data were made freely available, the methods of arriving at the quantitative data may differ from organisation to organisation. As such, comparisons made between the data of different

organisations would be rendered invalid.

Finally, the 'rules-of-thumb' of objective data may well differ from industry to industry. For example, a return on investment of 50% may be excellent and hence represent a success in one industry, while it may represent a failure in another industry.

As a result of the foregoing difficulties (which have long plagued new product researchers) it was hoped that the subjective judgement of the respondents would serve as a useful substitute for objective information. It was furthermore assumed that the respondents' subjective opinions would have incorporated considerations of whether the new product reached its expected target and thus fulfilled company expectations.

In summary, the primary data requirements were information on each of the 63 variables for both successful and unsuccessful new products. The following sub-section represents a discussion of the manner in which the data was collected for the research purposes.

5.2 THE METHOD OF DATA COLLECTION EMPLOYED

The research data requirements allowed the researcher to employ a written questionnaire which was mailed to the members of the research sample. The need to obtain data for a great number of products manufactured by companies located throughout South

Africa rendered personal interviews financially unfeasible and impractical.

While there are advantages to the use of a written questionnaire, such as the respondent being able to work at his or her own pace and there being no room for interviewer bias, it must be borne in mind that there is no incentive to respond, especially if the questionnaire is long or complex.

The nature of the data which the researcher needed to obtain allowed for the use of a structured questionnaire. This was fortunate since it is less time consuming for the respondent to complete and it therefore increases the likelihood of obtaining a response.

It now becomes necessary to pay closer attention to the questionnaire employed in this research, which may be found in Appendix B of this thesis. A number of considerations in the construction of the questionnaire require mention. Each of these will be discussed in turn.

(a) The rationale behind the contents of section A of the questionnaire

Section A was divided into two questions. The first represents an open-response question asking the respondents to supply their reason(s) if they are unable to or do not wish to respond. The objective of this question was to

secure the respondents' compliance. It was hoped that this question would serve as an appeal to the respondent and thus increase the researcher's response rate.

The second question refers to the size of the organisation in terms of the number of employees it employs. The rationale for including the size dimension was that it would enable the researcher to make useful correlations. These are presented in Chapter 5 of this thesis.

(b) The general questionnaire instructions

The respondents were asked to respond for a successful and/or an unsuccessful new product launched over the preceeding ten years. As a result of the subjectivity involved, notes were provided on what constituted a successful new product for the purposes of the research, as well as on what constituted a new product for the research purposes.

While the former has been dealt with earlier in this chapter, the latter demands some attention. A new product was defined as "a product that is significantly different from the company's current offerings and includes product replacements, product line extensions and product diversifications".

The first part of this definition was adapted from

Cafarelli's definition, namely that a new product is "... a product or service which is significantly different from anything a company currently offers ...". (1980:3)

The latter half of the definition was included after some consideration of Hisrich, et al's new product classification which appears in Figure 4.1.

Initial product mix	Remerchandising	Product improvement	Replacement	Market extension	Product line extension	Diversification
a_1 ↓ Market 1	a_1 ↓ Market 1 (Sales increases)	A_1 ↓ Market 1 (Further sales increases)	A_2 for A_1 ↓ Market 1	A_2 ↓ Market 1 A_2 ↓ Market 2	A_2 A_3 A_4 ↓ Market 1 A_2 ↓ Market 2	A_2 A_3 A_4 ↓ Market 1 A_2 ↓ Market 2 B_1 ↓ Market 3

FIGURE 4.1 A NEW PRODUCT CLASSIFICATION SCHEME (Hisrich, et al., 1978:11)

The classifications which were excluded, were excluded for the following reasons:

* Initial product mix

  This merely represents the existing product and serves as a starting point for developing the other classifications.

* Remerchandising

  While there is an improvement in the marketing strategy in this case, there is no actual change in the product itself.

* Product improvement

  This category was excluded as it was assumed that the success would depend on the original product and its development, and not only the activities involved in the improvement of the product.

* Market extension

  In such a category the new product development is severely limited since the same product is merely marketed to a new market.

(c) The instructions for the completion of section B

The respondents were asked to indicate to what extent each of the statements contained in section B applied to the development of their company's successful and/or

unsuccessful product by circling the appropriate response options. They were supplied with five response options for each of the products.

It may be noted that the researcher avoided using the word "failure" and rather resorted to using the word "unsuccessful". The rationale for so doing lies in the assumption that the word "failure" has negative connotations and may evoke the respondent's emotions, thereby influencing his responses.

(d) The structure of section B

Each factor under consideration was presented in the form of a statement. The factors in each group were presented under the group headings discussed in sub-section 5.1 of this chapter. Since there were many factors under consideration (63), it was hoped that this would reduce the monotony of the questionnaire as the headings serve as "interruptions" and allow the respondent a mental break. The structure furthermore facilitated and simplified the data analysis procedure.

Section B made use of statements demanding closed responses. The advantages of such an approach include the following:

* a high level of reliability,
* responses are easily comparable,

* the questions are easy to answer, and
* tabulation and analysis are made simple.

The main disadvantage of such an approach is, on the other hand, the fact that the respondent is forced to answer in a way in which he may not have wanted to answer. That is to say, the words are "put into the respondent's mouth". However, it is felt that this disadvantage did not prejudice the study since the response options merely represented different degrees of adoption.

(e) The quality of the questionnaire

Since the questionnaire dealt with qualitative issues, tests for reliability and validity were not made. A pilot study was however undertaken.

The original questionnaire was presented to four marketing directors of different organisations, constituting part of the sample, in the East London area. The objective of this was to ensure that the questions and statements were intelligible and unambiguous. Fortunately, there were no major changes which were required to be made. The only changes which were seen to be necessary were in respect of the wording of sentences.

Having considered the method which was used to collect the required data, it now becomes appropriate to discuss the

administration of the data collection.

5.3 THE ADMINISTRATION OF THE DATA COLLECTION

As a result of the large number of sample members, personal contact was not made with these members prior to the mailing of the questionnaires. Although such personal contact may have served to increase the response rate, it was unfeasible in view of the numbers involved.

The questionnaires were sent directly to the sample members together with a covering letter and a stamped, self-addressed return envelope. It was hoped that the latter would elicit the cooperation of the potential respondent.

Once a decrease in the volume of returns was reached, reminders and additional questionnaires were mailed. This served as a boost to the final response rate.

A summary of the findings of the research was sent to the participating respondents after the completion of the data analysis. It was expected that such an offer, which was made in the covering letter of the questionnaire, would serve as an inducement to complete and return the questionnaire.

Having considered the method by which the research data was collected, it now becomes appropriate to consider the methods

employed in the analysis of the collected data.

6. DATA ANALYSIS

6.1 INTRODUCTION

The data which was collected for the purposes of this research was analysed by using the SPSSX Information Analysis System which is seen as "... a comprehensive tool for managing, analyzing, and displaying information". (Norusis, 1985:iii) Unfortunately, the package will no longer be available in South Africa as from 1987.

The refusal to renew South Africa's SPSSX license is a result of the current sanctions against South Africa.

This section of this chapter will describe the measurement levels of the variables of the research, the descriptive statistics, statistical tests and multivariate analyses employed and the correlations made between the size of the organisation and the new product development organisational structures employed by the organisations.

6.2 VARIABLE MEASUREMENTS

Measurement refers to "... the use of rules to assign numbers to objects or events". (Wood, 1977:161) These rules determine the level of measurement that is obtained. It is essential that the researcher is aware of the level of measurement of his or her

variables as "the operations allowable on a given set of scores are dependent on the level of measurement achieved". (Siegel, 1956:22)

Before being in a position to describe the types of analyses which were performed on the data, it is therefore necessary to firstly establish what levels of measurement were used for each variable entering the analyses.

(a) The performance of the product and the size of the organisation

The performance of the product, being the dependent variable, was measured by a continuum dichotomized into two intervals, namely "successful" and "unsuccessful". The size of the organisation, on the other hand, was measured by a continuum consisting of five categories, each representing a range of the number of employees employed by the company.

At surface level, it may appear as if the above-mentioned two variables constituted nominal measurement which occurs when different classes are qualitatively related and the differences between the categories are of kind and not of degree.

The variables do, however, in fact represent ordinal measurement, a somewhat more powerful level of measurement than nominal measurement. An ordinal scale represents a

quantitative dimension where the scale values are quantitatively related, but the differences between successive values are not necessarily equal.

The objects in an ordinal scale must stand in some kind of relation to one another. Siegel (1956) states that typical relations include "higher", "more preferred", and "more difficult". With respect to the two variables under consideration it may be stated that the relation for the performance of the product was "more preferred" (i.e. successful) and the relation for the size of the organization was "more than" (i.e. a response of 3 indicates that more employees were employed than a response of 1). As such, these two variables may be considered to be measured ordinally.

Ordinal numbers, according to Kerlinger (1964) indicate rank orders and not absolute quantities. Siegel describes the difference between nominal and ordinal scales as follows:

> "...the ordinal scale incorporates not only the relation of equivalence (=) but also the relation 'greater than' (>). The latter relation is irreflexive, asymmetrical, and transitive."
>
> (1956:24)

Ordinal scaling lends itself to nonparametrical tests or ranking statistics which do not require operations of

arithmetic. For example, it is of no use requesting means and standard deviations for variables with an ordinal scaling as an ordinal scale is not isomorphic to the numerical system.

(b) The factors representing the new product performance discriminators

The factors, constituting the independent variables were represented by the 63 statements contained in section B of the research questionnaire. These variables, represented by Likert-type scales, although not strictly of an interval scaling nature, may be treated as such.

With interval measurement, the scale values are related by a single, underlying quantitative dimension and there are equal intervals between successive values. Thus, besides having the defining relations of equivalence and greater than, as in the case of ordinal scaling, interval scaling also has the property of known ratios between two intervals. That is to say, the distances in the scales representing the property being measured have numerically equal differences between them.

It is often unclear whether the differences between successive units are in fact equal, as is the case with the variables under consideration. When such a situation arises, the researcher has to decide whether to regard the

measurement as ordinal or interval. Since there are advantages to having interval data, most researchers treat the data as interval. (Wood,1977)

Kerlinger (1964) states that distances within a scale can theoretically not be added without interval equality. Like Wood, however, he is of the opinion that one can with considerable assurance, often assume equality of intervals. In his own words, Kerlinger states the following:

> "... if we have, say, two or three measures of the same variable, and these measures are all substantially and linearly related, then equal intervals can be assumed."
>
> (1964:440)

The bulk of the literature then, appears to be of the opinion that ordinal measurements may be treated as interval measurements but that the researcher must be constantly alert to the possibility of gross inequality of intervals and must take care in his or her interpretation of results.

By assuming interval measurement, as was done in the case of this researcher's independent variables, one is able to use more powerful statistics and hence extract more from the data. This is recognised by Guilford who states the following:

> "... experimental data often approach the condition of equal units sufficiently well that there is tolerable error in applying the various statistics that call for them.

> This is one of those occasions for making use of approximations, even gross ones, in order that one may extract the most from his data."
>
> (Kerlinger, 1964:441)

Interval scaling lends itself to the use of parametric statistics which are, by nature, more powerful than nonparametric statistics.

In summary then, it may be stated that the variables included in this research where measured or assumed to be measured as follows:

* Performance of the product - ordinal scaling
* Size of the organisation - ordinal scaling
* New product performance discriminating factors - interval scaling

Having established the levels of measurement of the research variables, one is now able to proceed to a description of the analyses employed in this research.

6.3 DESCRIPTIVE STATISTICS

Descriptive statistics are, in a sense, a type of univariate statistics as they analyze the variables in isolation of one another. In this research, the following descriptive statistics were obtained for both the successful product responses and the unsuccessful product responses.

* frequencies,
* modes,
* medians,
* means,
* standard deviations,
* levels of kurtosis, and
* skewness of the variables.

Even before the levels of kurtosis and skewness for the variables were obtained, the researcher was able to deduce, from the previous statistics, that the variables were not normally distributed. The determination of the occurrence or nonoccurrence of normality was, in fact, the prime objective of obtaining descriptive statistics for the variables.

Such a determination was necessary since multivariate statistics, also used in the analysis, assume not only interval scaling but also normality. Since it was found that the variables were not normally distributed, they were required to be transformed prior to the conducting of the multivariate analyses.

Fisher's Z-SCORES were used for this purpose. Z-SCORES determine how many standard deviation units a score is above or below the mean. They are derived scores, as opposed to raw scores and with such scores, the standard deviation itself becomes the unit of measurement.

Guilford states that "when distribution in a population is nonnormal, we can convert the measurements into values on a new scale on which the distribution is normal". (1964:181) These values are the Z-SCORES as described above.

The distribution of Z-SCORES is normal in that the distribution is not only mesokurtic (as opposed to platykurtic or leptokurtic in nonnormal distributions) but also not negatively or positively skewed.

By transforming the research data into Z-SCORES (with a distribution having a mean of 0 and a standard deviation of 1) the researcher was able to make use of multivariate statistics without violating the assumptions of such analyses.

However, before the transformation to Z-SCORES and multivariate analyses were conducted, statistical tests were employed. The following section is devoted to a description of those tests utilized.

6.4 STATISTICAL TESTS

The statistical tests conducted were bivariate in nature since they considered each variable individually with the dependent variable, product performance, and not the combination of and interaction between the variables as is the case in multivariate analyses.

Two tests were conducted. These were as follows:

(a) Test for relationship

Correlation coefficients were obtained to determine whether or not the dependent variable (product performance) and the independent variables were related.

Since the measurement of product performance was ordinal, a nonparametric test had to be employed. Those available for this purpose were SPEARMAN'S Rank Correlation Coefficient and KENDALL'S Rank Correlation Coefficient. Both of these represent a measure of association which requires that both variables be measured in at least an ordinal scale. The KENDALL coefficient has one advantage over the SPEARMAN coefficient in that it can be generalised to a partial correlation coefficient. This was, however, not necessary for the research purposes and the SPEARMAN coefficient was thus used.

Both methods use the same amount of information in the data and both have the same power to detect association. The efficiency of these tests, when compared with the most powerful parametric correlation, PEARSON'S r, is approximately 91%. (Siegel, 1956)

In summary, a two-tailed SPEARMAN'S correlation test was used and the 0,05 significance level was adopted.

(b) Test for significant differences between the means of the successful product responses and the unsuccessful product responses

The purpose of employing this test was to determine whether there was in fact a significant difference between the means of the successful and unsuccessful product responses.

The parametric test which serves this purpose is the T-TEST but this was not used for these research purposes since it requires, among other factors, equality in variances of the populations and the normality of distributions. This requirement was not satisfied, as was made apparent by the levels of skewness and kurtosis.

While Kerlinger states the following:

> "Unless there is good evidence to believe that populations are rather seriously nonnormal and that variances are heterogenous, it is usually unwise to use a nonparametric statistical test in place of a parametric one."
>
> (1964:287)

he also says that if there is doubt as to the normality of the distribution or if one knows that the distribution is not normal, one should use a nonparametric test that does not make the normality assumption. It is for this reason that the researcher decided to be conservative in approach and employ a nonparametric test of significance.

A summary of the available nonparametric statistical tests and measures of correlation is presented in Table IV.1.

TABLE IV.1 NONPARAMETRIC STATISTICAL TESTS

LEVEL OF MEASUREMENT	NONPARAMETRIC STATISTICAL TEST*					NONPARAMETRIC MEASURE OF CORRELATION (Chap. 9)
	One-sample case (Chap. 4)	Two-sample case		*k*-sample case		
		Related samples (Chap. 5)	Independent samples (Chap. 6)	Related samples (Chap. 7)	Independent samples (Chap. 8)	
Nominal	Binomial test, pp. 36–42 χ^2 one-sample test, pp. 42–47	McNemar test for the significance of changes, pp. 63–67	Fisher exact probability test, pp. 96–104 χ^2 test for two independent samples, pp. 104–111	Cochran Q test, pp. 161–166	χ^2 test for *k* independent samples, pp. 175–179	Contingency coefficient: C, pp. 196–202
Ordinal	Kolmogorov-Smirnov one-sample test, pp. 47–52 One-sample runs test, pp. 52–58	Sign test, pp. 68–75 Wilcoxon matched-pairs signed-ranks test,† pp. 75–83	Median test, pp. 111–116 Mann-Whitney *U* test, pp. 116–127 Kolmogorov-Smirnov two-sample test, pp. 127–136 Wald-Wolfowitz runs test, pp. 136–145 Moses test of extreme reactions, pp. 145–152	Friedman two-way analysis of variance, pp. 166–172	Extension of the median test, pp. 179–184 Kruskal-Wallis one-way analysis of variance, pp. 184–193	Spearman rank correlation coefficient: r_s, pp. 202–213 Kendall rank correlation coefficient: τ, pp. 213–223 Kendall partial rank correlation coefficient: $\tau_{xy.z}$, pp. 223–229 Kendall coefficient of concordance: *W*, pp. 229–238
Interval		Walsh test, pp. 83–87 Randomization test for matched pairs, pp. 88–92	Randomization test for two independent samples, pp. 152–156			

* Each column lists, cumulatively downward, the tests applicable to the given level of measurement. For example, in the case of *k* related samples, when ordinal measurement has been achieved both the Friedman two-way analysis of variance and the Cochran Q test are applicable.

† The Wilcoxon test requires ordinal measurement not only within pairs, as is required for the sign test, but also of the differences between pairs. See the discussion on pp. 75-76.

(Siegel, 1956)

Since it was established that the discriminating variables may be considered as being intervally measured, the available statistical test for independent samples is the RANDOMIZATION TEST FOR TWO INDEPENDENT SAMPLES.

Unfortunately the SPSSX package did not allow for the conducting of this test. The next best alternative therefore had to be employed, namely the MANN-WHITNEY U TEST which assumes ordinal measurement.

Siegel, himself, says that the MANN-WHITNEY U TEST is

> "... one of the most powerful of the nonparametric tests, and it is a most useful alternative to the parametric t-test when the researcher wishes to avoid the t-test's assumptions...".
>
> (1956:116)

Furthermore, it may be noted that if the MANN-WHITNEY test is applied to data which might properly be analyzed by the most powerful parametric test, the T-TEST, its power efficiency approaches 95,5% as N increases and is close to 95% even for moderate-sized samples. (Siegel, 1956)

The significance level adopted for the purpose of the MANN WHITNEY test was 0,05. Having presented the statistical tests used in the analysis, one is now in a position to discuss the multivariate analyses which were conducted in this research.

6.5 MULTIVARIATE ANALYSES

Since, as stated previously, multivariate analyses assume normality of distributions, the research data was firstly transformed to FISHER'S Z-SCORES before the multivariate analyses were conducted. It may also be noted that multivariate analyses assume interval scaling. This assumption was, as described earlier, also satisfied.

The multivariate analysis in this research was unfortunately plagued by computer system problems. The original intention was to conduct a DISCRIMINANT analysis but, although it was supposedly available in the SPSSX package, the procedure failed to run. It was unfortunately not feasible to contact the suppliers of the package to rectify this system problem since such rectification would require time which was simply not available as a result of the fact that the SPSSX package will not be available in South Africa next year.

The DISCRIMINANT analysis will nevertheless be discussed when discussing the alternative analysis which was employed, namely the REGRESSION analysis.

Two multivariate analyses were utilized for the research purposes. Each of these will now be described.

(a) FACTOR analysis

It was necessary to first conduct a FACTOR analysis before

being able to conduct the REGRESSION analysis. The reason for this lies in the fact that if the variables entering the REGRESSION analysis are characterised by high intercorrelations, the results may be distorted.

The aim of the FACTOR analysis was therefore to reduce the 63 discriminating variables involved in the research to a more manageable set of variables and to reduce the incidence of high intercorrelations between the many variables.

FACTOR analysis is similar to CLUSTER analysis but the latter is much more ad hoc. While both procedures identify related groups of variables, CLUSTER analysis can be restricted to search only for positive association between variables while FACTOR analysis allows variables to be either positively or negatively related to a factor.

Norusis describes FACTOR analysis as "... a statistical technique used to identify a relatively small number of factors that can be used to represent relationships among sets of many interrelated variables". (1985:125) It essentially aids in the identification of the underlying, not directly observable constructs or factors.

There were four steps involved in the FACTOR analysis conducted for this research. Each of these will now be discussed.

* STEP ONE : COMPUTATION OF A CORRELATION MATRIX

The correlation matrix was constructed for all variables. This enabled the identification of variables which did not appear to be related to other variables. Associated statistics as regards the appropriateness of the factor model were also obtained.

The Kaiser-Meyer-Olkin measure of sampling adequacy was found to be 0,27515. Since this was relatively low it seemed to indicate that a FACTOR analysis of the variables may not be a very good idea. The outcome of the FACTOR analysis was however encouraging and it was therefore decided to report the results.

* STEP TWO : FACTOR EXTRACTION

In this step, it was determined how to calculate the factors to represent the data as well as the number of factors which were necessary to make the representation.

The principal components method of extraction was used and all factors with eigenvalues of greater than one were retained. This resulted in a 19 factor model which accounted for 80,6% of the variance of the dependent variable. The scree plot furthermore emphasized the need for a 19 factor model.

The reproduced correlation matrix displayed the estimated correlation coefficients and the residuals. Since only 17% of the residuals were greater than 0,05, the model seemed to fit the data well.

* STEP THREE : FACTOR ROTATION

A varimax method of rotation was used. Such a method attempts to "... minimize the number of variables that have high loadings on a factor". (Norusis, 1985:140)

The purpose of rotation was to achieve a simple structure and thereby enhance the interpretability of the factors.

From the rotated factor matrix the researcher was able to determine which variable belonged to which factor by considering the factor loadings for each variable on each factor.

* STEP FOUR : COMPUTATION OF THE FACTOR SCORES

The regression method factor scores were computated. However, it may be noted that all of the three available methods in SPSSX for calculating factor scores would have given rise to the same factor scores which are exact rather than estimated. This is so since the principal components extraction was used. (Norusis, 1985)

The factor scores represented each factor's scores for each case and served as the input for the REGRESSION analysis.

The 19 factors extracted from the data all had eigenvalues of greater than one and 8 of the factors had eigenvalues of greater than 2. Since the 19 factor model explained 80,6% of the variance it described new product projects fairly well.

For all factors, the variable loadings of at least several variables were strikingly high, most of which were greater than 0,6.

While some of the factors were relatively simple to label, others did pose problems. The labelling of the factors will, however be discussed in Chapter 5.

In summary, the FACTOR analysis helped to clarify and simplify the set of variables used to describe the new product situation. Instead of there being 63 interrelated project characteristics, the FACTOR analysis resulted in a more manageable 19 independent dimensions.

(b) REGRESSION analysis

The reason for the original intention to conduct a DISCRIMINANT analysis may be found in Figure 4.2.

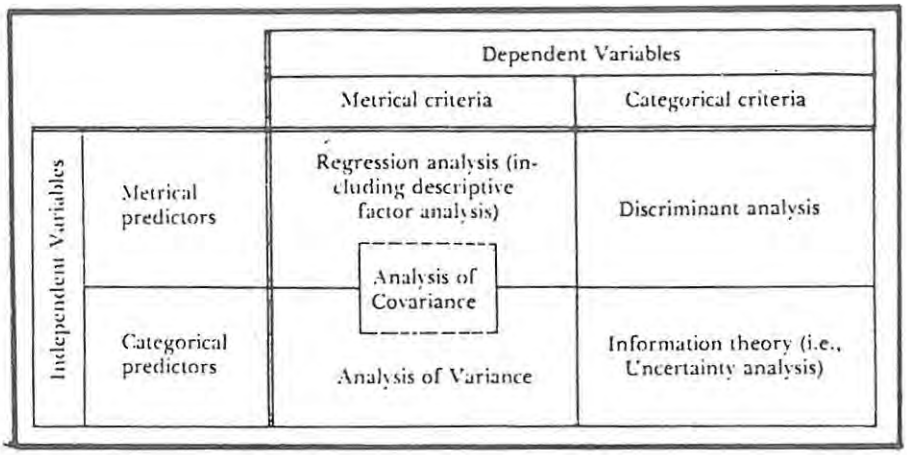

FIGURE 4.2 MULTIVARIATE PREDICTIVE ANALYSES (Rozeboom, 1966:543)

Since system problems were encountered when attempting to run the DISCRIMINANT procedure, the next best alternative was selected, namely a REGRESSION analysis. As such the dependent variable was treated as being metrical rather than categorical. This was, however, not thought to be a serious problem since it was established that the performance of the product may be considered to be ordinally measured.

Rozeboom defines DISCRIMINANT analysis as "... a method for estimating categorical criteria from metrical data". (1966:552) As such, it is a method for predicting outcomes, in this case success or failure. It also identifies the variables which are important for distinguishing among the outcomes. That is to say, it identifies the good predictor

variables.

REGRESSION analysis, on the other hand, studies relationships among variables and calculates multiple regression equations as well as the associated statistics and plots. (Norusis, 1985) It calculates the least squares line and enables the researcher to draw inferences about the relationship of the variables in the population.

There are 3 assumptions which are central to REGRESSION analysis. These are:

- normality and equality of variance,
- independence, and
- linearity.

The T statistic and F statistic as well as the R square and adjusted R square represent tests of the hypothesis that there is no linear relationship between the dependent variable and each independent variable, and hence that the slope of the regression line is 0.

A stepwise regression was conducted for the research purposes. With such a method the first variable entered is the one which has the largest correlation with the dependent variable. The subsequent entry of variables is based on the partial correlations and after each stage where a new

variable is entered, the variables already in the equation are assessed to determine whether they are eligible for removal. The latter is based on the maximum probability of F-to-remove.

The Beta values obtained from the REGRESSION analysis represent the standardized regression coefficients while the B values represent the partial regression coefficients.

In assessing the relative importance of each independent variable, by using REGRESSION, there are two possibilities. Firstly, the researcher is able to determine the importance of each variable when it is used alone to predict the dependent variable. In this case, the larger the absolute value of the correlation coefficient of the independent and dependent variable, the stronger is the relationship between the two. This research was able to draw conclusions in this regard.

Secondly, the researcher is able to determine how important the independent variables are when they are used to predict the dependent variable along with other independent variables. This gives consideration to the interactions between the independent variables and is considerably more difficult to establish. Such a determination requires the consideration of B values, R square change values and tolerance levels.

The current research was able to satisfy the first possibility well but was weaker in satisfying the second possibility. It is the opinion of this researcher that a DISCRIMINANT analysis would have been capable of utilizing the data to a richer and fuller extent.

The foregoing multivariate analyses represent the crucial part of the data analysis and will be elaborated on in Chapter 5 which contains the results and their interpretation respectively. Before presenting the research results it is however necessary to discuss a further analysis which was conducted.

6.6 Correlations between organisational size and the new product development organisational structures employed by the organisations

The conducting of the above correlation served as an attempt to determine whether the size of the organisation influences the type of new product development structure which it employed. The SPSSX CROSSTABS procedure was used to accomplish this.

The chi-square test of significance was employed. The aim of this was to test the independence of the variables and hence whether there is a significant relationship between them. It must be noted that while the test gives an indication of independence or dependence, it does not provide information about the strength or the form of the association.

CHAPTER FIVE

RESULTS AND INTERPRETATION

Having considered the methodology of the current research, it now becomes appropriate to present the results obtained, from the employing of such a methodology, and their interpretation.

CONTENTS

1. INTRODUCTION

This chapter contains the results of the data analysis and the interpretation of these results. The results are based on data obtained from 93 new consumer product launches. Table V.1 categories the products in terms of the dependent variable, namely the performance of the product.

TABLE V.1 PRODUCTS FOR WHICH RESEARCH DATA WAS OBTAINED

PERFORMANCE OF THE PRODUCT	NUMBER OF PRODUCTS
SUCCESSFUL	51
UNSUCCESSFUL	42
TOTAL NUMBER OF PRODUCTS	93

The results from each type of analysis are now presented.

2. DESCRIPTIVE STATISTICS

Since the purpose of obtaining the descriptive statistics was to determine the normality or nonnormality of the distributions, it is necessary to present the results of the levels of skewness and

kurtosis. Appendix C of this research thesis contains these results.

From the levels of skewness and kurtosis the researcher was able to ascertain that the distributions for all variables were markedly nonnormal.

3. STATISTICAL TESTS

The results and interpretation of each of the two statistical tests conducted are presented below.

3.1 TEST FOR RELATIONSHIP

The computer utilized a random sample of 74 cases for this test since the available workspace did not allow for the full set of 93 cases. The significant SPEARMANS correlation coefficients are presented in Table V.2.

As is made apparent in the table, 12 of the 63 independent or discriminating variables were significantly related to product performance. Eleven variables were negatively correlated with the performance of the product, while one variable displayed a positive correlation.

Since product successes were coded 1 and product failures were coded 2, it may be stated that the positive correlation of the

TABLE V.2 SIGNIFICANT CORRELATIONS BETWEEN PRODUCT PERFORMANCE AND THE PRODUCT PERFORMANCE DISCRIMINATING VARIABLES

VARIABLE NAME	r_s	*SIGNIFICANCE
Familiarity with the buyer behaviour	-,4002	0,000
Familiarity with the competitive situation	-,3633	0,001
Superiority of the product in need satisfaction	-,3577	0,002
Uniqueness of product features offered	-,3522	0,002
Proficiency of promotional campaign	-,3310	0,004
Adequate production volume for demand	,3055	0,008
Market derived new product idea	-,2632	0,023
Product's ability to reduce customer costs	-,2574	0,027
Consideration of distributors' potential attitudes	-,2551	0,029
Willingness of distributors to stock the product	-,2527	0,031
High market growth rate	-,2332	0,046
Clarity of the specification of the product by the marketplace	-,2315	0,050
* Adopted significance level = 0,05		

variable "adequate production volume for demand" indicates that adequate production volume to meet demand does not necessarily lead to success. In fact, in the case of this research sample, adequate production volume to meet demand was related to failure.

On the other hand, in this research sample, the negatively correlated variables indicate that a product is more likely to be successful if:

* the company is familiar with the buyer behaviour and the competitive situation,
* the product is superior to competing products in terms of need satisfaction,
* the product offers unique product features,
* the promotional campaign is proficient,
* the product is able to reduce the customers' costs,
* the potential attitudes of distributors are considered and anticipated,
* the distributors are willing to stock the product,
* the market growth rate is high,
* the product is clearly specified by the marketplace, and
* the product idea is market derived.

It may be noted that all the correlation coefficients fall between the absolute values of 0,23 and 0,40. According to Guilford (1956), such correlations are low but indicate a definite, yet small, relationship.

3.2 TEST FOR SIGNIFICANT DIFFERENCES BETWEEN THE MEANS OF THE SUCCESSFUL AND UNSUCCESSFUL PRODUCT RESPONSES

The MANN-WHITNEY test produced the significant differences between the means of the successful product responses and the unsuccessful product responses which are contained in Table V.3.

As is made apparent in the table, 15 of the discriminating factors were found to have significant differences between the means of the successful product responses and the unsuccessful product responses. These differences indicate the potential of the variables to serve as discriminators between success and failure.

It is most interesting to note that all of these variables are marketing-related variables dealing with the market, the product and the promotion and distribution. This finding is consistent with Carreno's research (1979) where it was found that successful products benefit from a fortunate combination of marketing factors, are well funded and planned, and are typically characterised by having undergone well conducted marketing assessment.

A comparison between the new product performance discriminating variables found to be significantly correlated with product performance and the variables displaying significant differences between the means of the successful and unsuccessful product

TABLE V.3 PRODUCT PERFORMANCE DISCRIMINATING VARIABLES DISPLAYING SIGNIFICANT DIFFERENCES BETWEEN THE MEANS OF THE SUCCESSFUL PRODUCT RESPONSES AND THE UNSUCCESSFUL PRODUCT RESPONSES

VARIABLE NAME	U	*SIGNIFICANCE
Familiarity with the buyer behaviour	491,0	0,0000
Familiarity with the competitive situation	607,5	0,0002
Uniqueness of product features offered	658,5	0,0006
Superiority of product in need satisfaction	646,0	0,0007
Proficiency of promotional campaign	680,5	0,0015
Willingness of distributors to stock the product	687,0	0,0026
Consideration of distributors' potential attitudes	661,5	0,0027
Familiarity with buyer price sensitivity	684,0	0,0047
Market derived new product idea	733,5	0,0060
Appropriate and targetted sales force launch efforts	761,5	0,0103
Clarity of the specification of the product by the marketplace	718,0	0,0117
Adequate production volume for demand	768,0	0,0136
High market growth rate	786,5	0,0240
Competency of preliminary market assessment	733,0	0,0349
Product quality higher than competing products	820,0	0,0458
* Adopted significance level = 0,05		

responses revealed that 11 variables fell into both these categories. These variables are as follows:

* uniqueness of product features offered,
* superiority of the product in need satisfaction,
* proficiency of the promotional campaign,
* adequate production volume for demand,
* market derived new product idea,
* familiarity with the competitive situation,
* familiarity with the buyer behaviour,
* consideration of potential attitudes of distributors,
* high market growth rate,
* willingness of distributors to stock the product, and
* clarity of the specification of the product by the marketplace

One of the variables, namely "the product's ability to reduce customer costs" displayed a significant relationship with product performance but did not show a significant difference between the means of the successful and unsuccessful product responses. Furthermore, four variables displayed a significant difference between the successful and unsuccessful product responses but did not display any relationship with product performance. These variables are as follows:

* appropriate and targetted sales force launch efforts,
* product quality higher than competing products,
* familiarity with buyer price sensitivity, and

* competency of preliminary market assessment.

The above may arise since these analyses are typically bivariate in nature and, as such, do not consider interactions between the discriminating or independent variables which may occur.

It now becomes appropriate to focus on the multivariate analyses which were conducted.

4. MULTIVARIATE ANALYSES

The results and interpretation of the FACTOR analysis and the REGRESSION analysis are presented below.

4.1 FACTOR ANALYSIS

The scree plot of eigenvalues and factors is presented in Figure 5.1. The vertical line on the plot indicates the point at which the factor eigenvalues are less than one. As is apparent, there were 19 factors with eigenvalues greater than one. These formed the basis of the 19 factor model.

The 19 factors, together with their percentage of variance explained (appearing in brackets after the factor label) and the variables pertaining to each factor are presented in Appendix D of this thesis.

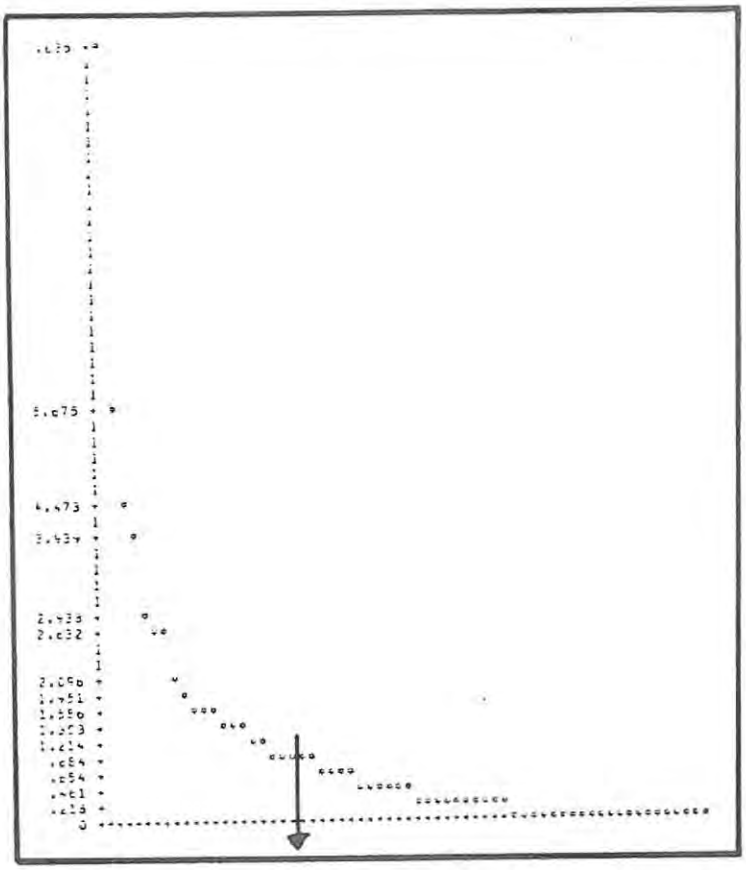

FIGURE 5.1 SCREE PLOT OF FACTORS AND EIGENVALUES RESULTING FROM THE FACTOR ANALYSIS

In order to gain deeper insight into the way in which the variables in each factor are related to each other, each factor will be discussed in turn.

(a) Factor 1 : Production, financial and managerial synergy and proficiency

This factor, which accounted for the largest proportion of variance, consisted of 7 variables of a production, financial and managerial nature. One of the remaining variables, namely "the existence of a favourable corporate image" did not appear to fit the factor as well as the others. The only relationship of the latter to the former that the researcher was able to infer was that companies

which display a high level of production, financial and managerial proficiency are therefore perhaps predisposed to enjoying the benefits of an established corporate image.

The last variable to be discussed is "the establishment of a new product committee". While it seems strange at first that this variable was included with the others in this factor, it may be noted that this may have occurred as a result of this variable's managerial nature.

(b) Factor 2 : Marketing knowledge and proficiency

This factor was perhaps the easiest to label since all eight of the variables represented by it are of a marketing nature.

(c) Factor 3 : Product uniqueness and superiority

Like Factor 2, Factor 3 was also simple to label. The first four variables quite obviously relate to the uniqueness and superiority of the product while the last one, "familiarity with the competitive situation", requires some explanation. It appears as though this variable is related to the previous four since familiarity with the competitive situation within a market facilitates the development of a unique and superior product.

(d) Factor 4 : Product technical complexity

While Factor 1 has production synergy and proficiency as a

dimension, this factor relates solely to the technical dimension of the product. While Factor 1 and Factor 4 are to some extent related, the FACTOR analysis has treated them as two separate entities. This may result from the fact that a product may represent a technological breakthrough yet at the same time make use of existing production processes with only minor adaptations.

The last two variables comprising Factor 4, "newness of product class" and "newness of the consumer need being satisfied", indicate that when the need and product class are new to the company, the technology is more often than not also new to the company.

(e) Factor 5 : Parent company involvement in new product development

Both of the variables represented by this factor dealt with the involvement of the parent company in the development of the new product. As such, the factor was simple to label.

(f) Factor 6 : Market competitiveness

The first three variables in this factor deal logically with the competitiveness of the market. The last variable's relationship with the rest is however somewhat more obscure and therefore requires some explanation. This variable, namely "the innovativeness of the product", has a negative variable loading. This seems to indicate that a highly

innovative product may, in the initial stage of its launch, not be faced with intense competition. This is compatible with the product life cycle theory which states that during the product launch stage there are normally very few competitors since most competitors enter during the market growth stage.

(g) Factor 7 : New product development organisational structure and market dynamism

The four variables represented by this factor consist of two categories. The first two deal with the type of new product development organisation structure while the last two deal with the dynamism of the marketplace. It was difficult to establish a common link between these two but it appears as though companies operating in dynamic markets are more likely to employ permanent new product organisational structures, such as new product departments and new product manager organisational arrangements. The reader may recall from chapter two that both of these have an element of permanency as organisational structures.

(h) Factor 8 : Strength of marketing communications and launch effort

While Factor 2 concerned itself with marketing knowledge and proficiency, this factor concerns itself with the more specific marketing tasks of two closely related areas, namely communications and launch efforts.

The first four variables are concerned with the salesforce and the distributors, two important forces in communications and launch efforts, while the fifth is related to the competency of the test market. The latter appears to be included with the former since it is, in a sense, a trial launch.

(i) Factor 9 : Relative price of the product

The labelling of this factor was intuitively logical since both of the variables represented by the factor were of a pricing nature.

(j) Factor 10 : Market size and growth and level of risk

This factor consisted of three variables, two of which dealt with the size and potential size of the market. The third, namely "the level of risk", was included since it appears as though the level of risk is positively related to the market size as all three have positive variable loadings.

(k) Factor 11 : Production capacity

While this factor possesses some overlap with Factor 1, it may be noted that it deals more specifically with the capacity of the production facilities since it includes "the adequacy of production volume to meed demand" and "the ability to produce the product at the scheduled start of production date".

(l) Factor 12 : Competency of idea and concept testing

Two of the variables described by this factor deal with the testing of the new product idea and concept, the latter represented by the use of pre-test market research techniques. The third variable, namely "the product's ability to reduce customer costs", at first appeared unrelated to the former two. The only commonality which the researcher was able to infer was the probability that an assessment of the product's ability to reduce the customer's costs is normally conducted during the idea and concept testing stages.

(m) Factor 13 : Investment magnitude

This factor consisted of only one variable and was as such simple to label.

(n) Factor 14 : Extent of brand manager's involvement and previous launches overseas

The two variables described by this factor may at first seem totally unrelated. However the supposed logic for combining these two variables appears to lie in the fact that if a product was previously launched overseas much of the development work would already have been conducted. As such, the new product development activities may be made the responsibility of the brand manager since the demands on his time are not as great and would therefore enable him to continue with his day-to-day activities.

(o) Factor 15 : Familiarity with customers in the marketplace

The labelling of this factor proved simple since it only contained one variable.

(p) Factor 16 : Customer dissatisfaction with competing products

As was the case with Factor 15, Factor 16 also only contained one variable and was therefore easy to label.

(q) Factor 17 : Government activity in the marketplace

Once again, this factor contained only one variable. It too was therefore easy to label.

(r) Factor 18 : Familiarity with competitors and distributors in the marketplace

This factor was comprised of two variables, each referring to a component of the marketplace, namely the competitors and the distributors.

(s) Factor 19 : Strength of brand name and establishment of a venture team

This factor posed the greatest problem when assigning labels to the factors. The researcher was unable to ascertain what the commonality between the two variables comprising the factor was, and was therefore forced to make the label one which contained two separate and seemingly unrelated parts. This therefore had to be borne in mind when interpreting the analysis conducted on the factors.

The factors discussed above served as the input for the REGRESSION analysis and hence represented the newly constructed independent variables.

4.2 REGRESSION ANALYSIS

As stated in Chapter 4, there are two approaches to the assigning of relative importances to each independent variable, the independent variables being the discriminating factors. Each of the approaches will be discussed in turn.

(a) The importance of each independent variable when used alone to predict performance

The correlation coefficients of the correlations between product performance and the factors arising from the FACTOR analysis are used to assign relative importances to the discriminating factors. These correlation coefficients may be found in Table V.4.

The larger the absolute value of the correlation coefficient, the stronger is the linear relationship. Those variables with high absolute correlations are thus more important predictors of performance than those with low absolute correlation coefficients. It may, at this stage, be noted that this interpretation is somewhat crude as the interpretation in section (c) gives further and more detailed attention to those coefficients.

TABLE V.4 CORRELATION COEFFICIENTS FROM THE CORRELATION BETWEEN PRODUCT PERFORMANCE (THE DEPENDENT VARIABLE) AND THE FACTORS ARISING OUT OF THE FACTOR ANALYSIS (THE INDEPENDENT VARIABLES)

DISCRIMINATING FACTORS	CORRELATION COEFFICIENT
* Market size and growth and level of risk	0,927
* New product development organisation structure and market dynamism	-0,853
* Parent company involvement in new product development	-0,799
* Strength of marketing communications and launch effort	-0,764
* Competency of idea and concept testing	0,643
* Familiarity with competitors and distributors	-0,638
* Market competitiveness	-0,631
* Familiarity with customers in the marketplace	0,629
* Government activity in the marketplace	-0,583
* Production, financial and managerial synergy and proficiency	0,517
* Extent of brand manager's involvement and previous launches overseas	0,419
* Marketing knowledge and proficiency	-0,413
* Product uniqueness and superiority	-0,376
* Investment magnitude	-0,362
* Strength of brand name and establishment of a venture team	-0,291
* Product technical complexity	0,289
* Customer dissatisfaction with competing products	0,259
* Production capacity	-0,235
* Relative price of product	0,130

The categorization of the factors as predictors of success or failure on their own, based on Guilford's descriptions of the magnitudes of correlation coefficients (1956), is contained in Table V.5.

TABLE V.5 RELATIONSHIP OF THE DISCRIMINATING FACTORS WITH PRODUCT PERFORMANCE

FACTORS CATEGORIZED IN TERMS OF THE MAGNITUDES OF THEIR CORRELATION COEFFICIENTS	CORRELATION COEFFICIENT
HIGH CORRELATION, MOST SUBSTANTIAL RELATIONSHIP WITH PRODUCT PERFORMANCE	
Market size and growth and level of risk	0,927
New product development organisation structure and market dynamism	-0,853
Parent company involvement in new product development	-0,799
Strength of marketing communications and launch effort	-0,764
MODERATE CORRELATION, SUBSTANTIAL RELATIONSHIP WITH PRODUCT PERFORMANCE	
Competency of idea and concept testing	0,643
Familiarity with competitors and distributors	-0,638
Market competitiveness	-0,631
Familiarity with customers in the marketplace	0,629
Government activity in the marketplace	-0,583
Production, financial and managerial synergy and proficiency	0,517
Extent of brand manager's involvement and previous launches overseas	0,419
LOW CORRELATION, DEFINITE BUT SMALL RELATIONSHIP WITH PRODUCT PERFORMANCE	
Product uniqueness and superiority	-0,376
Investment magnitude	-0,362
Strength of brand name and establishment of a venture team	-0,291
Product technical complexity	0,289
Customer dissatisfaction with competing products	0,259
Production capacity	-0,235
SLIGHT CORRELATION, ALMOST NEGLIGIBLE RELATIONSHIP WITH PRODUCT PERFORMANCE	
Relative price of product	0,130

The factors in Table V.5 which have a negative correlation are related to new product success, while those having a positive correlation are related to failure. The direction of the relationship will, however, be discussed more fully in the following section.

(b) The importance of each discriminating factor when it is used to predict product performance along with other factors

A stepwise regression method gave rise to a regression equation. Only one of the factors entered the regression equation as the other 18 did not meet the entrance criteria. Table V.6 presents the statistics after the single step which occurred in the regression analysis.

TABLE V.6 SUMMARY STATISTICS OF THE REGRESSION ANALYSIS

STEP	MULTR	RSQ	ADJRSQ	F(EQU)	SIGF	RSQCH	FCH	SIGCH
1	.9271	.8594	.8126	18.341	.023	.8594	18.341	.023

	VARIABLE	BETAIN	CORREL	LABEL
IN:	FSC10	.9271	.9271	REGR FACTOR SCORE 10 FOR A

In the single step of the regression analysis Factor 10 (FSC10) was entered. The label of this factor is "market size and growth and level of risk".

The R square and adjusted R square statistics indicate that most of the observations fall on the regression line, and

hence that the relationship is linear. The closer R square is to 1, the more linear is the relationship. In the case of this factor, R square was 0,8594 and adjusted R square was 0,8126. Adjusted R square was smaller than R square and represents the goodness of fit of the model in the population, R square being optimistic for the fit with the population.

The F statistic (18,341) and its significance (0,023) also indicate a linear relationship. The R square change statistic, on the other hand, indicates the increase in R square when the variable is entered. Since only one factor was entered R square and R square change are equal. Furthermore, since R square change is relatively large, this means that the factor provides unique information about product performance not available from the other factors.

In the same way that R square is equal to R square change, as described above, the F change statistic and its significance are also equal to the F statistic and its significance.

Table V.7 contains a summary of the factors which entered the regression equation and the factors which did not enter the regression equation.

TABLE V.7 SUMMARY OF THE FACTORS WHICH ENTERED THE REGRESSION EQUATION AND THE FACTORS WHICH DID NOT ENTER THE REGRESSION EQUATION

IN

VARIABLE	T	SIG T
FSC10	4.283	.0234
(CONSTANT)	6.738	.0032

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	TOLERANCE	MIN TOLER	T	SIG T
FSC01	-.37204	-.66776	.45287	.45287	-1.269	.3322
FSC02	.21162	.45435	.64797	.64797	.721	.5457
FSC03	.29117	.61848	.63425	.63425	1.113	.3815
FSC04	.11636	.30463	.96348	.96348	.452	.6954
FSC05	-.10269	-.15393	.31585	.31585	-.220	.8461
FSC06	-.05349	-.10873	.58096	.58096	-.155	.8913
FSC07	-.22466	-.31009	.26781	.26781	-.461	.6899
FSC08	-.31991	-.67841	.63220	.63220	-1.306	.3216
FSC09	.22163	.56836	.99069	.99069	1.029	.4116
FSC11	-.30681	-.81598	.99436	.99436	-1.996	.1840
FSC12	.09216	.19007	.59783	.59783	.274	.8099
FSC13	-.34651	-.92407	.99972	.99972	-3.419	.0759
FSC14	.34726	.92325	.99368	.99368	3.399	.0767
FSC15	.19670	.44679	.72472	.72472	.706	.5532
FSC16	.11632	.31180	.97616	.97616	.464	.6882
FSC17	.31921	.54416	.40851	.40851	.917	.4556
FSC18	.04370	.08194	.49429	.49429	.116	.9181
FSC19	-.26523	-.70712	.99921	.99921	-1.414	.2929

The factor in the equation, "market size and growth and level of risk", has a significant linear relationship with product performance as the significance of the T statistic is 0;0234 and therefore less than the adopted significance level of 0,05. The factors not in the equation, however, do not have significant linear relationships with product performance when used together to assign levels of importance to the factors as predictors of performance.

The tolerance levels refer to the proportion of variability not explained by the other factors. The reader may note that the greater the tolerance, the greater is the partial correlation coefficient. The partial correlation coefficient refers to the correlation of the factors when considered together as predictors, as opposed to the correlation coefficients dealt with in section (a) which deal with the factors individually as predictors.

Table V.8 contains the factors which did not enter the regression equation in order of their partial correlation coefficients.

The reader may note that the order of the factors when ranked according to their partial correlation coefficients is different to the order when ranked according to their correlation coefficients contained in Table V.4. This arises since the partial correlation coefficients include consideration of the interactions between the discriminating factors.

The detailed statistics of the factor contained in the regression equation are presented in Table V.9. An analysis of the statistics contained in the table follows.

The B value represents the partial regression coefficient and the SE B, its estimated standard error. Similarly, the

TABLE V.8 THE PARTIAL CORRELATION COEFFICIENTS OF THE FACTORS WHICH DID NOT ENTER THE REGRESSION EQUATION

DISCRIMINATING FACTORS	PARTIAL CORRELATION COEFFICIENT
* Investment magnitude	-0,924
* Extent of brand manager's involvement and previous launches overseas	-0,923
* Production capacity	-0,816
* Strength of brand name and establishment of a venture team	-0,707
* Strength of marketing communications and launch effort	-0,678
* Production, financial and managerial synergy and proficiency	-0,668
* Product uniqueness and superiority	0,618
* Relative price of the product	0,588
* Government activity in the marketplace	0,544
* Marketing knowledge and proficiency	0,454
* Familiarity with customers in the marketplace	0,446
* Customer dissatisfaction with competing products	0,312
* New product development organisation structure and market dynamism	-0,310
* Product technical complexity	0,305
* Competency of idea and concept testing	0,190
* Parent company involvement in new product development	-0,154
* Market competitiveness	-0,109
* Familiarity with competitors and distributors in the marketplace	0,082

insight into the importance of the factors as possible, it is necessary to look at both the correlation coefficients and the partial correlation coefficients. This is the purpose of section (c).

(c) The overall importance of each discriminating factor

Each factor will be considered separately. Thereafter, an attempt will be made to rank the factors in order of their importance. It must be noted that the ranking will generally be subjective since, while it is based objectively on the factors' importance individually, it is based subjectively on the factors' importance when they are considered together. The subjectivity arises since partial correlation coefficients are used rather than B values as a result of B values not being available for the factors which did not enter the regression equation.

Factor 1 : Production, financial and managerial synergy and proficiency

Correlation coefficient = 0,517
Partial correlation coefficient = -0,668

Both of these correlations are relatively high. However, Factor 1 on its own is positively correlated with product performance, while when considered along with the other factors, it is negatively correlated with product performance.

This appears to indicate that production, financial and

TABLE V.9 DETAILED STATISTICS OF THE FACTOR CONTAINED IN THE REGRESSION EQUATION

BETA	SE BETA	CORREL	PART COR	PARTIAL	TOLERANCE
.92705	.21647	.92705	.92705	.92705	1.00000

VARIABLE	B	SE B	95 CONFDNCE	INTRVL BB
FSC10	.90511	.09459	.10407	.70615
(CONSTANT)	1.10417	.12636	.70265	1.50630

Beta value represents the standardized regression coefficient and the SE BETA, its standard error. Since all the variables are measured in the same units, the magnitude of the B value represents an indication of the relative importance of the factor for discriminating between success and failure when all the factors are considered together. However, as a result of the fact that only one factor entered the equation, the researcher is unable to establish the relative importances of the factors in this manner.

The researcher is of the opinion that only one factor entered the equation because firstly, some of the factors were highly correlated with the others and secondly, the discriminating factors' relationships with product performance were not strictly linear, as is apparent in the T statistics contained in Table V.7.

As a result of the above, it is thought that to gain as much

managerial synergy and proficiency does not lead to success on its own. Rather, if it is present along with other favourable factors, it may be considered as a discriminator for success.

Factor 2 : Marketing knowledge and proficiency

Correlation coefficient = -0,413
Partial correlation coefficient = 0,454

As with Factor 1, Factor 2's correlations are both relatively large, one being negative and the other being positive.

When considered on its own, the correlation indicates that marketing knowledge and proficiency is positively related to success. However, when other factors are present, this factor may be related to failure. It is thought that this is so since other factors may be unfavourable such as, for example, the market size and growth and the level of risk.

Factor 3 : Product uniqueness and superiority

Correlation coefficient = -0,376
Partial correlation coefficient = 0,618

The factor on its own has a small but definite relationship with success. On the other hand, when considered with the other factors, it has a larger correlation with failure. This appears to indicate that product uniqueness and superiority may lead to failure, depending on the status of the other prevailing factors.

Factor 4 : Product technical complexity

Correlation coefficient = 0,289
Partial correlation coefficient = 0,304

These correlation coefficients indicate that both individually and with the other factors, product technical complexity is related to failure. That is to say, the greater the technical complexity, the more likely the product is to fail.

Factor 5 : Parent company involvement in new product development

Correlation coefficient = -0,799
Partial correlation coefficient = -0,154

In both cases, parent company involvement is related to success. The relationship is, however, stronger when the factor is considered in isolation of the other factors.

Factor 6 : Market competitiveness

Correlation coefficient = -0,631
Partial correlation coefficient = -0,109

It is surprising to note that high levels of market competitiveness were related to success in the sample for this research. This is contrary to Cooper's finding (1979) that a highly competitive market represents a barrier to success. It may, however, be noted that Cooper's factor included not only the competitiveness of the market but also the level of customer satisfaction.

Factor 7 : New product development organisation structure and market dynamism

Correlation coefficient = -0,853
Partial correlation coefficient = -0,310

These coefficients indicate that if the market is more dynamic and if the company employs a permanent new product development organisational structure, new product success is more likely to result. This is, however, more true when the factor is considered individually than when it is considered with the other factors since the correlation of the former is larger.

Factor 8 : Strength of marketing communications and launch effort

Correlation coefficient = -0,764
Partial correlation coefficient = -0,678

As was expected, the stronger the marketing communications and launch efforts, the more likely it is that the product will be successful. Both of these correlations are large and hence indicate a strong relationship between the factor and product performance. This is consistent with Cooper's results (1979) namely that strong marketing communications and launch efforts are facilitators to new product success.

Factor 9 : Relative price of product

Correlation coefficient = 0,130
Partial correlation coefficient = 0,588

The relative price of the product as a factor on its own is weakly related to product performance. However, when

considered along with the other factors, it shows a strong relationship with product performance. Both correlations indicate that high product prices relative to competitors' product prices and the company's other products are associated with product failure.

Factor 10 : Market size and growth and level of risk

According to the regression equation, this factor was found to be the most important discriminator between success and failure. Markets which were large in size and had high growth rates as well as high risk projects were seen to be related to failure. This finding is in contradiction of Cooper's findings (1979). He found that high market sizes and growth rates were facilitators of success. It must, however, be borne in mind that his factor did not include the risk dimension.

Factor 11 : Production capacity

Correlation coefficient = -0,235
Partial correlation coefficient = -0,816

Although the first coefficient is weak and the second is very strong, both coefficients indicate that sufficient production capacity is related to success. Production capacity alone, however, is not a key factor but it must be considered with other vital factors as a determinant of success.

Factor 12 : Competency of idea and concept testing

Correlation coefficient = 0,643
Partial correlation coefficient = 0,190

Individually, this factor is related to product failure and together with the other factors, it is very weakly related to product failure. While this is seemingly strange, the fact is that it was found not to be an important determinant of success. Included in this factor was the product's ability to reduce the customer's costs. The correlation indicates that this is not directly related to success. It therefore seems that other factors are more important, one of which might be the relative quality of the product.

Factor 13 : Investment magnitude

Correlation coefficient = -0,362
Partial correlation coefficient = -0,924

Both of these coefficients are negative and while the first indicates a moderate relationship, the second indicates a very strong relationship. The signs of the coefficients indicate that the greater the investment magnitude, the more likely it is that the product will be a success. This is, in itself, logical. While Cooper saw this factor as being only weakly related, it must be pointed out that he included the source of the idea within the investment magnitude factor.

Factor 14 : Extent of brand manager's involvement and previous launches overseas

Correlation coefficient = 0,419
Partial correlation coefficient = 0,923

The above coefficients, being positive, indicate that if a product was previously launched overseas in the parent company's country, it does not mean to say that success is inevitable. In fact, previous launches overseas tend to be related to failure rather than success. Furthermore, in this sample, when the product development was conducted mostly by the brand manager the product was more likely to be a failure. This may stem from the fact that brand managers are so inundated with day-to-day activities that they do not have sufficient time to devote to new product development. The latter is emphasized by Cunningham, et al., (1981) who state that those involved in new product development should not be involved in the day-to-day operations of the company.

Factor 15 : Familiarity with customers in the marketplace

Correlation coefficient = 0,629
Partial correlation coefficient = 0,447

Since the variable represented by this factor was "newness of customers", it follows that the more familiar the company is with the customers, the more likely it is that the product will be successful. Cooper (1979) saw his factor, namely "newness to the firm", to be related to success, but only weakly. His factor did, however, include all

dimensions of newness and not just the newness of the customers to the company.

Factor 16 : Customer dissatisfaction with competing products

Correlation coefficient = 0,259
Partial correlation coefficient = 0,312

These coefficients indicate that customer dissatisfaction with competing products is not strongly related to success. Rather, it appears as though it is related to failure, even if only weakly. Thus, customer dissatisfaction with competing products does not automatically lead to the success of the new product. It is assumed that factors such as the superiority of the product and the relative price of the product may be more important.

Factor 17 : Government activity in the marketplace

Correlation coefficient = -0,583
Partial correlation coefficient = 0,544

This factor, individually, is related to success. However, when considered together with the other factors it is related to failure. Furthermore, the relationship is a relatively strong one. One can therefore conclude that government legislation and intervention in the marketplace serves as a barrier to success.

Factor 18 : Familiarity with competitors and distributors

Correlation coefficient = -0,638
Partial correlation coefficient = 0,081

Since the variables represented by this factor are termed "newness of competitors to the company" and "newness of distributors being utilized", the partial correlation coefficient indicates that if the company is unfamiliar with the competitors and distributors, failure is more likely to result. The relationship is, however, a somewhat weak one. It may be noted that the weakness of this relationship was also discovered by Cooper (1979).

Factor 19 : Strength of brand name and establishment of a venture team

Correlation coefficient = -0,291
Partial correlation coefficient = -0,707

The negative signs of these coefficients indicate that the factor is associated with success. This appears logical and should prove reassuring to those spending time and money on branding.

Table V.10 presents the ranking of the factors, from most important to least important, based on a consideration of the correlation coefficients and the partial correlation coefficients.

TABLE V.10 SUBJECTIVE RANKING OF THE DISCRIMINATING FACTORS IN TERMS OF THEIR CORRELATION COEFFICIENTS AND PARTIAL CORRELATION COEFFICIENTS

A BARRIERS TO SUCCESS

RANKING	FACTOR
1	Market size and growth and level of risk
2	Extent of brand manager's involvement and previous launches overseas
3	Government activity in the marketplace
4	Relative price of the product
5	Product technical complexity

B KEYS TO SUCCESS

RANKING	FACTOR
1	Strength of marketing communications and launch effort
2	Investment magnitude
3	Production, financial and managerial synergy and proficiency
4	New product development organisational structure and market dynamism
5	Familiarity with customers in the marketplace
6	Production capacity
7	Strength of brand name and establishment of a venture team
8	Parent company involvement in new product development
9	Marketing knowledge and proficiency
10	Market competitiveness
11	Familiarity with competitors and distributors

C FACTORS DEPENDING GREATLY ON THE STATUS OF THE OTHER FACTORS

RANKING	FACTOR
1	Product uniqueness and superiority
2	Competency of idea and concept testing
3	Customer dissatisfaction with competing products

Having established the subjective relative importance of the independent factors, it now becomes appropriate to consider the results of the last analysis which was conducted.

5. CORRELATIONS BETWEEN ORGANISATIONAL SIZE AND THE NEW PRODUCT DEVELOPMENT ORGANISATIONAL STRUCTURES

Crosstabulations were obtained for the size of the organisation and

* the existence of a new product department
* the establishment of a new product committee,
* the appointment of a new product manager,
* the establishment of a venture team, and
* the extent of the brand manager's involvement in the development of the new product,

for both successful and unsuccessful product groups.

Only two of the correlations were found to bear a significant relationship. These were the size of the company and the extent of the brand manager's involvement for both the successful and the unsuccessful product groups. They are represented in Figures 5.2 and 5.3 respectively.

These correlations indicate that, for this sample, the larger the company, the more likely it is that the brand manager will play a large role in new product development. Hisrich, et al., (1978),

V1 ORGANISATION SIZE

V32	COUNT / ROW PCT / COL PCT / TOT PCT	1 (1-100)	2 (101-500)	3 (501-1000)	4 (1001-2000)	5 (2000+)	ROW TOTAL
1 DID NOT APPLY		1		4	6	5	16
		8.3		33.3	16.7	41.7	30.8
		25.0		100.0	16.2	55.6	
		2.6		10.3	5.1	12.8	
2 SMALL EXTENT		1		1	2	2	4
		25.0		25.0	50.0	50.0	10.3
		25.0		25.0	16.2	22.2	
		2.6		2.6	5.1	5.1	
3 MODERATE EXTENT		1	1	1	1	1	3
		33.3	33.3	33.3	33.3	33.3	7.7
		25.0	9.1	25.0	8.1	11.1	
		2.6	2.6	2.6	2.6	2.6	
4 LARGE EXTENT		3	1	1	2	1	7
		42.9	14.3	14.3	28.6	14.3	17.9
		75.0	9.1	25.0	16.2	11.1	
		7.7	2.6	2.6	5.1	2.6	
5 VERY LARGE EXTEN		1	9	1	4	1	13
		7.7	69.2	7.7	30.8	7.7	33.3
		25.0	81.8	25.0	36.4	11.1	
		2.6	23.1	2.6	10.3	2.6	
COLUMN TOTAL		4	11	4	11	9	39
		10.3	28.2	10.3	28.2	23.1	100.0

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F.< 5
38.65074	16	.0011	.308	25 OF 25 (100.0%)

STATISTIC	VALUE	SIGNIFICANCE
CRAMER'S V	.49904	

FIGURE 5.2 CROSSTABULATION BETWEEN ORGANISATION SIZE AND THE EXTENT OF THE BRAND MANAGER'S INVOLVEMENT IN SUCCESSFUL NEW PRODUCT DEVELOPMENT

V1 ORGANISATION SIZE

V32	COUNT / ROW PCT / COL PCT / TOT PCT	1 (1-100)	2 (101-500)	3 (501-1000)	4 (1001-2000)	5 (2000+)	ROW TOTAL
1 DID NOT APPLY		1	1	3	3	4	11
		9.1	9.1	27.3	27.3	36.4	33.3
		10.0	10.0	100.0	30.0	44.4	
		3.0	3.0	9.1	9.1	12.1	
2 SMALL EXTENT		1	2	1	1	2	4
		25.0	50.0	25.0	25.0	50.0	12.1
		10.0	20.0	33.3	10.0	22.2	
		3.0	6.1	3.0	3.0	6.1	
3 MODERATE EXTENT		1	2	1	1	2	4
		25.0	50.0	25.0	25.0	50.0	12.1
		10.0	20.0	33.3	10.0	22.2	
		3.0	6.1	3.0	3.0	6.1	
4 LARGE EXTENT		1	1	1	2	1	5
		20.0	20.0	20.0	40.0	20.0	15.2
		100.0	10.0	33.3	20.0	11.1	
		3.0	3.0	3.0	6.1	3.0	
5 VERY LARGE EXTEN		1	5	1	4	1	9
		11.1	55.6	11.1	44.4	11.1	27.3
		50.0	50.0	33.3	40.0	11.1	
		3.0	15.2	3.0	12.1	3.0	
COLUMN TOTAL		2	10	3	10	9	33
		6.1	30.3	9.1	30.3	27.3	100.0

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F.< 5
26.57333	16	.0465	.121	25 OF 25 (100.0%)

STATISTIC	VALUE	SIGNIFICANCE
CRAMER'S V	.44888	

FIGURE 5.3 CROSSTABULATION BETWEEN ORGANISATION SIZE AND THE EXTENT OF THE BRAND MANAGER'S INVOLVEMENT IN UNSUCCESSFUL NEW PRODUCT DEVELOPMENT

suggest that the product manager type of organisational arrangement is most appropriate for use by companies having multiple product lines. The findings of this research appear to be consistent with this suggestion since it may be assumed that larger companies typically have multiple product lines.

Since all of the remaining correlations were found to be insignificant, it shows that in this research sample there was no relationship between the size of the organisation and the likelihood of employing a new product department or committee, appointing a new product manager and establishing a venture team.

Having presented and interpreted the results, it now becomes appropriate to relate these results to the propositions of this research.

6. THE RESULTS AND THE RESEARCH PROPOSITIONS

The first subproblem of this research gave rise to eight propositions. Each of these will be considered in turn. Since the propositions relate to the original discriminating variables and the FACTOR analysis created new discriminating factors, each factor had to be considered for relevance to each proposition.

(a) New product success is expected to be positively related to products which are superior, have a differential or economic advantage, or are unique relative to competing products

Of the 19 factors, 2 are related to this proposition. They

are as follows:

* product uniqueness and superiority, and
* relative price of the product.

"Product uniqueness and superiority" is seen as a factor which, when present, does not determine success on its own. Rather, it may lead to success if other prevailing factors are also favourable.

A high relative price of the new product was considered as a barrier to success.

It may therefore be stated that new product success is positively related to products which have an economic advantage and may be positively related to the uniqueness and superiority of the product depending upon the status of other factors, such as relative price.

(b) New product success is expected to be positively related to products where the elements of the commercial entity, such as selling, distribution and production are proficient

Three of the 19 factors are relevant to this proposition. They are as follows:

* production, financial and managerial synergy and proficiency,
* strength of marketing communications and launch effort, and

* production capacity.

All three of these factors were found to be positively related to success with "strength of marketing communications and launch effort" appearing to be the most positively related out of the 18 factors which did not enter the regression equation.

It may therefore be concluded that new product success is positively related to products where the production and selling are proficient and where the financial and managerial elements of development are proficient.

(c) New product success is expected to be positively related to projects where considerable technical and market knowledge is acquired

The 3 factors, out of the 19 factors, which are relevant to this proposition are as follows:

* product technical complexity,
* competency of idea and concept testing, and
* marketing knowledge and proficiency.

It was found that new product success is positively related to the company's marketing knowledge and proficiency. However, while it is assumed that high product technical complexity requires considerable technical knowledge to be acquired, it was found that product technical complexity is related to failure rather than success.

Furthermore, competent idea and concept testing does not automatically lead to success. For success to occur, this factor must be accompanied by other favourable factors. It in fact appeared to be related to failure. The relationship was, however, so small so as to be regarded as negligible. As such, this variable does not seem to be an important discriminator of success.

(d) New product success is expected to be positively related to projects where the technical, marketing and evaluative (process) activities are proficiently undertaken

Four of the factors are related to this proposition. They are:

* marketing knowledge and proficiency,
* production, financial and managerial synergy and proficiency,
* parent company involvement in new product development, and
* competency of idea and concept testing.

As stated previously, the last factor was discovered to be almost superfluous to success. The first two, on the other hand, indicate that new product success is positively related to the production, financial, managerial and marketing aspects of the process activities. That is to say, their proficiency is a prerequisite for success. It was also discovered that parent company involvement in new product development is conducive to success.

(e) New product success is expected to be positively related to products entering mass, large, growing, dynamic, and uncompetitive markets, with a high but unsatisfied need for such products

The 4 factors, out of the 19 factors, which are related to this proposition are as follows:

* market competitiveness,
* new product development organisational structure and market dynamism,
* market size and growth and level of risk, and
* customer dissatisfaction with competing products.

This proposition was, surprisingly enough, rejected for the larger part of it. Customer dissatisfaction with competing products was found to be more related to failure, though very weakly, than success. As such, it can simply not be seen as a valuable discriminator of success. It is therefore assumed that other factors are more important such as, perhaps, the relative price of the product.

It was furthermore found that failure prevailed in markets which were large and had high growth rates as well as for projects which displayed high levels of risk. On the other hand, market competitiveness was found to be related to success rather than failure.

The portion of the proposition which was accepted as being true for the research sample was the fact that the dynamism

of the market tends to be positively related to success. That is to say, markets with rapidly changing consumer needs and frequent new product introductions tend to be conducive to successful new product development.

(f) New product success is expected to be positively related to projects where a high degree of resource compatibility exists between the needs of the project and the resource base of the firm

Three of the 19 factors are seen to be relevant to this proposition. They are as follows:

* production, financial and managerial synergy and proficiency,
* parent company involvement in new product development, and
* investment magnitude.

This proposition is accepted as being true in the case of this research sample. More specifically, it may be stated that new product success is more likely to result from large investments in the project and where the parent company provides resources and skills. Furthermore, production, financial and managerial compatibility with the new product project are also related to success.

(g) New product success is expected to be positively related to products or projects which are familiar to the firm

Two of the 19 factors were related to this proposition. They are as follows:

* familiarity with customers in the marketplace, and
* familiarity with competitors and distributors.

These two factors, representing the newness of the project to the firm, indicated that the proposition is to be accepted as being valid in the research sample. That is to say, success is more likely to result from new product projects which are more familiar to the firm.

(h) New product success is expected to be positively related to products or projects which are market derived

The relevant factor here is "product uniqueness and superiority" since one of the variables it is comprised of is "market derived new product idea". It is assumed that since the market perceives how unique or superior a product actually is, it is the market which is, in a manner, able to make suggestions for products which will be perceived as being unique or superior.

It was, however, found that product uniqueness and superiority, as previously stated, may be positively related to success but only if the status of other factors is favourable such as, for example, the relative price of the product. As such, the limiting of the derivation of new product ideas from the market is not an important discriminator of success.

In addition to the findings presented above which were related to

the propositions, three other factors which are not directly related to the propositions gave rise to findings. These are as follows:

(a) The occurrence of the new product having previously been launched overseas and the extent of the brand manager's involvement in the development of the new product are related to failure, rather than success.

(b) Government activity in the marketplace constitutes a barrier to success.

(c) The strength of the brand name and the existence of a venture team appear to be positively related to success.

The second subproblem gave rise to two propositions, namely

(a) large companies employ the venture team, task force and/or the product manager new product development organisational structures, and

(b) smaller companies employ the new product committee form of new product development organisational structures.

It was found that the only significant correlation between organisational size and the new product development organisational structures employed lay in the extent of the brand manager's involvement in the development of the new product. As was expected, it was found that larger companies tend to involve their brand manager's more extensively in the development of the

new product than smaller companies.

Since the findings have been related to the propositions, it is now appropriate to present a summary of the findings of this research. This is the purpose of the last section of this chapter.

7. SUMMARY OF RESULTS

The following represents a list of the findings of the research.

(a) New product success is positively related to :

* strong marketing communications and launch efforts,
* large investments in new product projects,
* proficient and compatible production, finances and management,
* the dynamism of the market and the existence of a permanent new product development organisation structure,
* high levels of company familiarity with the customers,
* sufficient production capacity,
* the strength of the brand name and the use of a venture team organisational structure,
* parent company contribution of skills and resources to the development of the new product,
* high levels of marketing knowledge and proficiency,
* highly competitive markets, and

* high levels of company familiarity with competitors and distributors.

(b) The following constitute barriers to successful new product development in the South African consumer products' markets:

* large markets with high growth rates and high levels of project risk,
* the previous launching of the same product overseas and high levels of brand managers' involvements in the development of the new product,
* government activity in the marketplace,
* high prices relative to competing products and the company's existing products, and
* high levels of product technical complexity.

(c) The following are weakly related to success or failure and depend greatly on the standing of the other factors:

* unique products which are superior to competing products,
* competent idea and concept testing, and
* customer dissatisfaction with competing products.

These factors do not appear to represent important discriminators of success in South African consumer products' markets. This may occur as a result of the dual nature of the South African economy. For example, the

superiority of the product and the customer dissatisfaction with competing products may not be important to success because the low income levels of the Black market may force the Black consumers to purchase on the basis of price rather than product characteristics. Further research in this regard is however necessary.

(d) Larger companies tend to involve brand managers in new product development to a greater extent than smaller companies.

The theoretical and managerial implications of the research findings are presented in Chapter 6.

CHAPTER SIX

IMPLICATIONS AND CONCLUSIONS

CONTENTS

1. INTRODUCTION

It is the purpose of this chapter to present the implications of the research findings, the limitations inherent in the research and the suggestions for further research.

2. IMPLICATIONS OF THE FINDINGS

It was hoped that the findings of this research would have useful implications for both theory and practice. The implications for each will now be dealt with.

2.1 THEORETICAL IMPLICATIONS

The theoretical implications of the current research lie in the suggestions for further research arising from this researcher's findings. These will, however, be discussed at a later stage in the current chapter.

2.2 MANAGERIAL IMPLICATIONS

The implications of the research findings for management lie primarily in the discovery of the keys for successful new product development and the barriers to successful new product development. Each of these will now be discussed from a managerial point of view.

(a) Keys to success

It is of interest to note that five of the eleven keys to success deal exclusively with marketing-related issues. This emphasizes the importance of marketing efforts when developing new products.

Factor 8, "strength of marketing communications and launch effort", calls for the following as prescriptions for new product success:

* using an existing sales force for the marketing of the new product and ensuring that their launch efforts are targetted in the appropriate and required manner so as to be in line with the overall launch strategy,

* anticipating distributors' potential attitudes towards the products in order to ensure their willingness to stock the product, and

* conducting the test market competently if one is undertaken.

These variables contained in Factor 8 emphasize the importance of the salesforce and the distributors in the launching of a new product.

Factor 15, "familiarity with customers in the marketplace" indicates to management that new products which are marketed

to the company's existing target market are more likely to succeed. Similarly, Factor 18, "familiarity with competitors and distributors in the marketplace" indicates that success is more likely to result from utilizing existing distributors and maintaining existing competitors rather than introducing new competitors to the firm. The latter is intrinsically logical since familiarity with competitors puts the company in a better position to anticipate their moves and responses.

The fourth marketing-related factor, Factor 19, "strength of brand name and establishment of a venture team" was, as stated previously, problematic to label since it contained two seemingly unrelated variables. What is made apparent, however, is the fact that companies should capitalize on existing strong brand names when launching new products or alternatively, attempt to create a strong brand name which may benefit them in their future new product launches.

The variables contained in the fifth marketing-related factor considered as a key to successful new product development, Factor 2, namely "marketing knowledge and proficiency", have the following implications for management. For success to occur,

* management must give full consideration to potential cost prices, selling prices and the resultant demand

levels,

* a competent market assessment is necessary,
* companies must familiarize themselves with the size of the new product's market and the buyer behaviour and price sensitivity within that market,
* a proficient promotional campaign is necessary, and
* companies must ensure that they have adequate market research resources.

Two keys to success relate to the investment in the new product project. Firstly, Factor 13, "investment magnitude" indicated that projects with high required investment levels are more likely to succeed. Secondly, Factor 5, "parent company involvement in new product development" indicated that success is more likely to result if the parent company provides skills and resources and involves itself in the company's new product development. This is of particular relevance to consumer product companies in South Africa since many of them have parent companies overseas with advanced knowledge.

A further key to success lies in Factor 1 "production, financial and managerial synergy and proficiency". The variables represented by this factor indicate that for success to occur,

* the new product project must be compatible with

production resources, financial resources and engineering skills,

* a favourable corporate image must be created,
* the company must possess adequate managerial skills and a sufficient advertising budget, and
* the pilot production and preliminary technical assessment must be competently conducted.

Furthermore, Factor 11, "production capacity" calls for the ability to produce sufficient supply to meet demand.

The final two keys to new product success are market related. Strange as it may seem, and contrary to Cooper's findings (1979) it was found that for South African consumer product companies, success is more likely to occur in competitive markets which are also dynamic. The researcher was unable to provide an explanation for this and it is therefore suggested that further research be conducted in this area.

(b) Barriers to success

Five of the factors were found to constitute barriers to new product success.

The first of these, Factor 10, "market size and growth and level of risk" indicated that new product entries into large, fast growing markets are related to failure.

Furthermore, as may be expected, high levels of project risk are also related to failure. The finding that large, fast growing markets are conducive to failure is rather surprising since the literature maintains that such market characteristics are prerequisites for success. It may however be that the current large markets in South Africa are comprised largely of the Black population. Marketers in South Africa have little experience in the Black markets and this may represent the cause of large South African markets being conducive to failure rather than success. Further empirical evidence is however needed in this regard in order to determine the objective reasons for large markets being conducive to failure.

Secondly, with regard to Factor 14, "extent of brand manager's involvement and previous launches overseas", it was found that products launched onto the South African market which had already been launched overseas proved to be largely failures. Furthermore, new products where the development was made the responsibility of the current brand manager tended to be among those products which failed. This may, as stated previously, be the result of the time constraints on brand managers in view of their already tight schedules.

Thirdly, it was found that high levels of government intervention and legislation in the marketplace constituted

a barrier to success. Companies should therefore avoid entering markets which are dominated by government interference.

Factor 9, "relative price of the product", indicates that demand in South African consumer goods markets may be price elastic. This arises from the fact that products which were high-priced relative to competing products and the company's existing products were found to be largely failures.

Finally, Factor 4 labelled, "product technical complexity", serves as a warning to South African consumer goods producers to avoid high technology products unless they are technological experts. The variables represented by this factor indicate that failure is related to products which are new to the company in terms of the need they satisfy and their product class, and which require the use of new technology and new production processes.

Having considered the managerial implications of the keys to success and the barriers to success, it may also be noted that this research was unable to make totally reliable conclusions as regards the following factors:

* product uniqueness and superiority,
* competency of idea and concept testing, and
* customer dissatisfaction with competing products.

It may, however, be tentatively stated that these factors alone are not keys or barriers to success but rather, depend on the standing of the other factors. For example, if customers are dissatisfied with current products on the marketplace a new entry does not guarantee success unless other factors, such as the relative price of the product, are favourable.

In view of the tentativeness of the statements as regards the above three factors, it is suggested that further research in these areas be conducted.

Having given consideration to the implications of the findings for management it now becomes necessary to discuss the limitations of this research which, quite obviously, have a bearing on the results discussed above.

3. LIMITATIONS OF THE RESEARCH

While the research has identified the direction of the relationship of the discriminators with product performance, it failed to identify the relative importance of the factors objectively. The ranking of the factors which was presented in chapter five was subjective and therefore tentative since it was based on the correlation coefficients and partial correlation coefficients rather than B values (partial regression coefficients), as was discussed earlier. As such, the researcher was unable to identify which dimensions were more critical than

others. The fact that the researcher was unable to determine the relative importance of the variables prevented the building of a descriptive model.

The identification of the variables which were related to success and the variables which were related to failure does, however, provide valuable inputs for the screening process of new product ideas and gives an indication of which activities in the development of new products require particular attention as well as what information is required. Insight was also gained in the area of determining which markets are conducive to success, although it is suggested that further research be conducted in this area.

In retrospect, it is also thought that more emphasis may have been placed on merchandising and the distributors' influence on success or failure. This is particularly so in view of the fact that the retailers distributing consumer products in South Africa are both large and powerful, as was mentioned in sub-section 3.2.4 of Chapter 1.

Besides the managerial implications of the research presented in sub-section 2.2, the research also gives rise to theoretical implications by making suggestions for further research. This serves as the focus for the following section.

4. SUGGESTIONS FOR FURTHER RESEARCH

Since relatively little research has been conducted in the consumer product area in South Africa, the current research serves as a general overview of the field. As such, it highlights specific areas requiring further and more detailed research.

Of particular note is the fact that this research found highly competitive markets conducive to success. It is suggested that further research be conducted in this regard in an attempt to explain this. Further research in determining whether the larger markets in South Africa are experiencing high failure rates as a result of their being primarily comprised of Black consumers, is also necessary. It may be found that this is so since marketers currently lack experience in Black markets.

A further area requiring more specific attention is, as mentioned in section 3 of this chapter, a more detailed investigation into the influence of merchandising and distributors on consumer new product success and failure. It is felt that research in this area should in fact receive top priority attention. This would provide consumer product manufacturers with valuable information as regards trade marketing which is becoming increasingly important in South Africa.

It is also suggested that research of a general nature, as is the

current research, be conducted on industrial new products. This would highlight areas requiring more attention for the benefit of South African industrial manufacturers. It would also be interesting to note the standing of the technical complexity of industrial products in relation to success, since it was found to be a barrier to success in consumer product markets.

Further research into the objective determining of the relevant importance of success discriminators would also be valuable since it would enable the building of descriptive models. Researchers with access to a DISCRIMINANT analysis procedure may be able to achieve this.

APPENDICES

APPENDIX A

ALPHABETIC LIST OF RESEARCH SAMPLE MEMBERS

African Products
Appeltiser Pure Fruit Juice
Argo Soap and Chemical Ind
Astra Melkprodukte
Aunt Caroline Rice Mills
Avroy Shlain

Bakers
Banquet Foods
Barbizon Tea and Coffee
Barrons Tobacco Co
Bartels Sweet Factory
Baumanns Biscuits
Beacon Sweets and Chocolates
Beech Nut Life Savers
Beehive Ice Cream Factory
Bertrams Wines
Better Baking Products
Better Kind Peanut Products
Bio Vita
Bliss Dairy Products
Blue Mountains Mushrooms
Brooke Bond Oxo
Brookes Lemos
Bokkie Meat Products
Bokomo
Borden Co SA
Bottelary Ko op Wynmakery
Bovril SA
Buccaneer Sea Products
Buffalo Salt Works

Cadbury
Candia Juice Manufacturers
Cara Beena Spices
Carefree Products
Carmel Chocolate and Sweets
Carnation Co
Carnation Foods
Castle Wine and Brandy Co
Cavalla
Cereal and Malt Extract Co
Cerebos Food Corp - Pronutro
Cerebos Food Corp
C.G. Smith Sugar
Chesebrough Ponds Int.
Clifton Royal
Clover Dairies
Clover Ice Cream
Coca Cola Bottling Co
Colgate Palmolive
Collondale Cannery
Colmon Foods
Cologne Perfumery
Colombo Tea and Coffee Co
Coo ee Mineral Water Co
Cornel Food Products
Cosmetco
Cow and Gate SA
Creamline Dairies

Dairy - Belle Corp
Dairymaid Ice Cream Corp
Davis Gelatine Industries
Deciduous Fruit Board Winery
Dermacult
Distillers Corp
Dominion Dairies
Douglas Green of Paarl
Drakenstein Co op Winery
Drostdyse Ko op Wynkelder

Elida Gibbs
Elizabeth Arden SA
Elgin Fruit Juices
Enterprise Meat Products
Epic Oil Mills
Epol
Eskort Bacon Co op
Estee Lauder

Fameux Cosmetics
Federal Creameries
Femista Products
Fido Pet Foods
Fine Foods
Five Roses Tea and Coffee
Food and Nutritional Products

Gants Foods
Gattis Italian Ice Cream
Gilbeys Distillers and Vinters

Glucose and Starch Products
Gordons Dry Gin Co SA
Greath North Soap Works
Guerlain SA

Harveld Products
Harvestime Co
Helena Rubenstein SA
Hercules Sweets
Honey Crunch
House of Coffees
Hulett Refineries
Humphries

ICS
International Flavours and Fragrances
Irvin and Johnson

Jabula Foods
Johnson and Johnson
Justine Beautilabs

Kaap Valley Tropical Fruit Juice Processors
Kellogg Co of SA
Kemklean
Kleen Nut Products
Kovisco Gedroogte Vleisprodukte
K. Schwarzkopf
KWV

Langeberg Co op
La Rochelle Wyn en Brandewyn
Lecol Products
Letaba Citrus Processors
Lever Brothers
Lipton SA

Maizecor Industries
Melrose Foods
Mixadrink
Monis and Fattis

Nasionale Suiwelkoop
National Cooperative Dairies
National Cooperative Dairies - Cheese Factory
National Cooperative Dairies - Ice Cream Factory
National Food Distributors
National Nut and Preserves
Natural Freezer Dried Foods
Nederburg Estate
Nelspruit Jersey Dairy
New Star Sweets Factory
Noogy People
Nutritional Foods

OFS Dried Milk Co
Ohlssons Cape Breweries
Orchid Foods
Osmans Spice Works
Oven Gold
Oxo Sa

Pasquini Pasta
Pepsi Cola Africa
Pharmador
Pitco
Potter and Moore Int SA
Premier Foods
Presmilk Produkte
Prima Foods
Progress Detergents
Pyott
Pyramid Halal Meat Products

Reckitt and Colman Products
Reckitt Toiletries Int
Rembrandt Tabakvervaardiging
Renown Foods Products Corp
Renown Fresh Meat Corp
Revlon SA
Rice Tic SA
Richardson - Vicks
Riviera Foods
Roberston Ko op Wynmakery
Robertsons
Royal Beech Nut

SAB
SA Bottling Co
SA Beverage Canners
SA Dried Fruit Co op
SA Margarine Corp
SA Mushroom Industries
SA Spice Works
SA Preserving Co
SA Sea Products
SA Oil Mills
Schweppes SA
Scotts Milk Products

Sea Harvest Corp
Selected Ice Cream and Dairies
Shulton SA
SFW
Silverbright Smoked Salmon
Silverstream Mushroom Products
Simba Quix Ltd
Simonsvlei Ko op Wynkelders
Skye Products

Snowserv
Sodastream
Sonnengold Orange Winery
Southern Pet Meats
Sparletta Suncrush
Spekenham
Springbok Cereal Ind
Star Foods
Star Products
Sterling Drug SA
Suncrush
Sunshine Master Food Manufacturers
Supa Energy Foods
Swartlandse Ko op Wynmaatskappy
Sylvan Products

Table Top Foods
Tastic Rice
The Sunshine Macaroni Co
Tiger Oats
Toilet Pak Manufacturers
Tongaat Foods
Tongaat Hulett Sugar Mills and Estates
Tongaat Mushrooms
Tongaat Oil Products
Tongaat Rice Mills
Transvaal Suikerkorporasie
Tunacor
Tuna Marine
T.W.Beckett and Co
Twins Products

Unie Wyn Beperk
Union Wine and Spirit Corp
United Dairies
United Oil and Cake Mills
United Tobacco Co

Vanda Cosmetics
van den Bergh and Jurgens
van Erkoms Tobaccos
Victory Sweets
Virginian Cheese and Food Co
Visko Sea Products
Vita C Produkte
Vlottenbergse Koop Wynkelders

Wavecrest Sea Enterprises
Weet Bix Co
Wella Manufacturing Co
Western Province Milk and Products
Western Province Preserving Co
Willards Foods
Wilson Rowntree
Woodstock Sweets

Yaldor Sweet Manufacturers
Yardley of London

APPENDIX B : RESEARCH QUESTIONNAIRE

RHODES UNIVERSITY · GRAHAMSTOWN

P.O. Box 94, Grahamstown, 6140 South Africa

Telegrams 'Rhodescol' Telex Telephone (0461) 22023 x 245

7 August 1986

Dear Sir/Madam,

I am currently a full-time Masters student in the Department of Business Administration at Rhodes University. In fulfillment of the requirements for this degree I am conducting research within the marketing field of new product development.

Given the high failure rate of new products launched onto the South African market, it is my research intention to identify the factors which distinguish successful new products from unsuccessful new products. It is hoped that the findings of this study will serve as an empirical base for the screening of new product ideas and that prescriptive guidelines for the new product development process wil be able to be formulated.

I would greatly appreciate it if you would assist me by completing the attached questionnaire, which will require approximately thirty minutes of your valuable time, and returning it at your earliest convenience in the stamped self-addressed envelope provided.

Should you require a summary of the findings of this research, please write your company name at the top of the questionnaire.

Thanking you in anticipation for your kind co-operation.

Yours sincerely,

(Miss) A R Tucker

NEW PRODUCT DEVELOPMENT RESEARCH QUESTIONNAIRE

SECTION A

(a) If you cannot or do not wish to participate, please state your reason(s) in the space provided below and return the questionnaire. The latter is very important to the accuracy of my research.

_____

_____

_____

_____

_____

(b) Please indicate how many people are employed by your company by ticking the appropriate response block below.

(i)	0	-	100	☐
(ii)	101	-	500	☐
(iii)	501	-	1000	☐
(iv)	1000	-	2000	☐
(v)	2000	+		☐

****

Your responses to the remainder of the questionnaire are to be made with reference to TWO new products launched by your company.

(i) A successful new product, and

(ii) an unsuccessful new product

Please respond only for products launched over the last ten years. i e: if you have not launched a product in the preceeding ten years, return the questionnaire as it is, or alternatively, if you have only launched either a successful or an unsuccessful product over the preceeding ten years, respond only for that product launched.

PLEASE NOTE:

(i) Success is to be measured subjectively in terms of the extent to which the product fulfilled company expectations. It is essential that you, as the respondent, select products which have been as far as possible clearly successful or unsuccessful.

(ii) For the purposes of this research, a new product is defined as a product that is significantly different from the company's current offerings and includes product replacements, product line extensions and product diversifications.

(iii) While your responses will be largely subjective, it is absolutely essential that you respond as rationally as possible.

SECTION B

For each of the following statements indicate to what extent it applied to the development of your company's successful and/or unsuccessful product by circling the appropriate response option.

The available response options range from 1 to 5 and the descriptions of these options are as follows:

1 - The statement DID NOT APPLY to any extent at all
2 - The statement applied to a SMALL extent
3 - The statement applied to a MODERATE extent
4 - The statement applied to a LARGE extent
5 - The statement applied to a VERY LARGE extent

EXAMPLE

The needs of customers in the new product's marketplace changed rapidly.

Successful Product	Unsuccessful Product
(1) 2 3 4 5	1 2 3 4 (5)

This would indicate that the needs in the unsuccessful new product's market changed rapidly, while those in the successful new product's market did not change rapidly at all.

A. THE COMMERCIAL ENTITY

1. Production facilities were ready for production at the scheduled start of production time.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

2. The launch efforts of the sales force were in accordance with the company's planned launch strategy for the new product.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

3. The new product offering had unique features for the potential customers.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

4. The new product was superior to competing products in satisfying customer needs.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

5. The new product enabled the customer to reduce his costs.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

6. The quality of the new product was higher than that of competing products.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

7. The promotional campaign for the new product was carefully planned and appropriate for the particular circumstances.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

8. The production volume was adequate to meet demand.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

9. The new product was higher priced then competing products.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

10. The product capitalized on a well established and accepted brand name.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

1	-	The statement DID NOT APPLY to any extent at all
2	-	The statement applied to a SMALL extent
3	-	The statement applied to a MODERATE extent
4	-	The statement applied to a LARGE extent
5	-	The statement applied to a VERY LARGE extent

B. INFORMATION ACQUIRED

1. The company was familiar with the technology involved in producing the new product.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

2. The new product idea was derived primarily from the market needs rather than the production capabilities of the company.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

3. The company was familiar with the buyer price sensitivity of the new product.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

4. The company was familiar with the competitive situation and took into account the potential competitor response.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

5. The company was familiar with the buyer behaviour of the consumers of the new product.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

6. The company knew the potential size of the new product's market.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

7. The company predicted the potential attitude of distributors towards the new product.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

1	-	The statement DID NOT APPLY to any extent at all
2	-	The statement applied to a SMALL extent
3	-	The statement applied to a MODERATE extent
4	-	The statement applied to a LARGE extent
5	-	The statement applied to a VERY LARGE extent

C. PROCESS ACTIVITIES

1. The company undertook the preliminary technical assessment of the new product competently.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

2. The company undertook the pilot production competently.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

3. The company undertook the preliminary market assessment of the new product competently.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

4. The company made use of pre-test market research techniques such as SENSOR offered by Research International and/or BASES offered by Market Research Africa.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

		Successful Product	Unsuccessful Product
5.	The company undertook the test market competently (answer only if a test market was conducted).	1 2 3 4 5	1 2 3 4 5
6.	The company's evaluation of alternative new product ideas was conducted competently.	1 2 3 4 5	1 2 3 4 5
7.	The development of the new product was conducted by the parent company. (respond only if applicable).	1 2 3 4 5	1 2 3 4 5
8.	The company fully considered the available information on likely cost prices as well as possible selling prices and the resultant demand levels in the testing of the new product concept.	1 2 3 4 5	1 2 3 4 5
9.	The company established a new product department for the development of the new product.	1 2 3 4 5	1 2 3 4 5
10.	The company established a new product committee for the development of the new products.	1 2 3 4 5	1 2 3 4 5
11.	The company appointed a new product manager to manage the development of the new product.	1 2 3 4 5	1 2 3 4 5
12.	The company established a venture team for the development of the new product. (See *).	1 2 3 4 5	1 2 3 4 5

* For definitional purposes, the characteristics of a venture team are as follows:

  - it is organisationally separate from the remainder of the organisation, (this is the key difference between a venture team and a new product committee).

  - members of the team are recruited from various functional areas, such as engineering, production, marketing, and finance.

  - existing lines of authority in the permanent organization are not necessarily valid in the venture team, and

  - the venture team manager usually reports to the chief executive officer and is given authority to make major decisions.

13. The new product development was conducted by the company's brand manager.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

1	-	The statement DID NOT APPLY to any extent at all
2	-	The statement applied to a extent
3	-	The statement applied to a MODERATE extent
4	-	The statement applied to a LARGE extent
5	-	The statement applied to a VERY LARGE extent

D. THE MARKETPLACE

1. The market of the new product was highly competitive.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

2. The market was characterised by intense price competition.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

3. Customers were dissatisfied with competitors products serving the market.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

4. The size of the market for the new product was large.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

5. The new product's market was characterised by a high growth rate.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

6. The new product's market had a dominant competitor.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

7. The new product's market was characterised by frequent new product introductions.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

8. The needs of customers in the new product's market place changed rapidly.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

9. The new product's market-place was subject to government intervention and legislation.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

10. The major wholesalers, retailers and distributors were willing to accept and place orders for the new product.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

11. The company was already well established in terms of its corporate image.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

1	-	The statement DID NOT APPLY to any extent at all
2	-	The statement applied to a SMALL extent
3	-	The statement applied to a MODERATE extent
4	-	The statement applied to a LARGE extent
5	-	The statement applied to a VERY LARGE extent

E. RESOURCES

1. The company had engineering skills compatible with the new product.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

2. The company had production resources compatible with the new product.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

3. The company had adequate financial resources.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

4. The company had the necessary market research resources or obtained such resources.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

5. The company had the necessary managerial skills for the new product.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

6. The company had a compatible sales force for the distribution of the new product.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

7. The company was able to provide a sufficient advertising budget for the new product.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

8. The parent company provided resources and skills (respond only if applicable).

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

1	-	The statement DID NOT APPLY to any extent at all
2	-	The statement applied to a SMALL extent
3	-	The statement applied to a MODERATE extent
4	-	The statement applied to a LARGE extent
5	-	The statement applied to a VERY LARGE extent

F. NATURE OF THE PROJECT

1. The potential customers were new to the firm.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

2. The product class was new to the firm.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

3. The consumer need which the product satisfied was not being satisfied by other products of the company.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

4. The production process was new to the firm.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

5. The product technology was new to the firm.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

6. The new product was distributed through distributors which were new to the firm.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

7. The new product introduced new competitors to the firm.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

8. The product was highly innovative and was the first of its kind to be launched onto the market.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

9. The new product was a high technology product.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

10. The new product represented a higher per unit price item than the company's existing products.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

11. The product was clearly specified by the market-place.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

12. A considerably large investment in the project was required.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

13. The product was new to South Africa but was established in the parent company's country. (respond only if applicable).

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

14. The level of risk involved in the project was high.

Successful Product	Unsuccessful Product
1 2 3 4 5	1 2 3 4 5

Thank you very much for your kind cooperation in completing this questionnaire. It is much appreciated.

(Miss) A R Tucker.

APPENDIX C

DETERMINATION OF NONNORMALITY OF DISTRIBUTION

LEVELS OF SKEWNESS AND KURTOSIS

(SP = Successful Products, UP = Unsuccessful Products, S = Skewness, K = Kurtosis)

DISCRIMINATING VARIABLES	SP		UP	
	S	K	S	K
Readiness of production facilities	-1,513	1,999	-0,745	-0,492
Appropriate and targetted sales force launch efforts	-2,024	5,400	-0,916	0,491
Uniqueness of product features offered	-2,127	5,151	-0,219	-1,307
Superiority of the product in need satisfaction	-1,062	0,594	-0,212	-1,071
Product's ability to reduce customer costs	0,114	-1,584	0,632	-0,888
Product quality higher than competing products	-0,813	0,030	-0,242	-1,067
Proficiency of promotional campaign	-1,627	2,348	-0,268	-0,943
Adequate production volume for demand	-0,671	-0,625	-1,515	2,143
Product price relative to competing products' prices	0,582	-1,002	0,209	-1,459
Strength of brand name	-0,668	-1,247	-0,086	-1,746
Familiarity with required technology	-1,349	3,817	-0,867	-0,466
Market derived new product idea	-1,946	4,215	-0,324	-1,252
Familiarity with buyer price sensitivity	-1,295	1,102	-0,173	-0,890
Familiarity with the competitive situation	-1,750	3,457	-0,776	0,190
Familiarity with the buyer behaviour	-1,124	1,457	0,042	-0,482
Familiarity with market size	-1,015	0,087	-0,378	-1,211
Consideration of potential attitudes of distributors	-1,036	0,312	-0,119	-1,070
Competency of preliminary technical assessment	-1,225	0,614	-0,590	-0,791
Competency of pilot production	-1,125	0,220	-0,364	-1,498
Competency of preliminary market assessment	-0,965	0,240	-0,578	-0,399
Use of pre-test market research techniques	1,238	0,043	0,919	-0,555
Competency of test market	-0,408	-1,585	-0,425	-1,065
Competent evaluation of new product ideas	-0,422	-1,175	-0,174	-1,319
Extent of parent company involvement	-0,608	-1,394	-0,719	-1,380
Competency of consideration of cost prices, selling prices and resultant demand levels	-0,652	-0,908	-0,401	-1,263
Establishment of a new product department	1,681	1,210	1,457	0,527
Establishment of a new product committee	0,373	-1,722	0,220	-1,851
Appointment of a new product manager	0,873	-1,043	1,008	-0,840
Establishment of a venture team	1,614	1,154	1,313	0,147
Extent of brand manager's involvement in new product development	-0,177	-1,731	0,066	-1,695
Competitiveness of market	-1,348	0,634	-1,659	2,013
Intensity of price competition in market	-0,528	-1,111	-0,666	-1,163
Customer dissatisfaction with competing products	0,632	-0,456	0,947	0,480
Market size	-0,843	-0,010	-0,721	-0,937
Market growth rate	-0,326	-0,761	0,128	-0,670
Existence of a dominant competitor	-0,134	-1,364	-0,453	-1,492
Frequency of new product introductions in the market	0,207	-1,214	0,401	-1,139
Speed of changes in customer needs in the market	0,337	-0,244	0,348	-1,192
Extent of government intervention and legislation in market	1,145	0,398	0,947	-0,740
Willingness of distributors to stock the product	-1,442	2,381	-0,221	-1,443
Existence of a favourable corporate image	-1,719	2,133	-2,266	5,273
Compatibility of engineering skills	-1,532	1,816	-1,123	0,529
Compatibility of production resources	-1,800	2,701	-1,694	2,214
Adequacy of financial resources	-1,422	1,166	-1,462	1,170
Adequacy of market research resources	-0,789	-0,659	-0,413	-1,292
Adequacy of managerial skills	-2,125	6,186	-1,034	0,491
Compatibility of current sales force	-2,021	4,323	-1,005	-0,213
Sufficiency of advertising budget	-1,014	0,234	-0,100	-1,107
Parent company provision of resources and skills	-0,139	-1,555	-0,409	-1,438
Newness of customers	1,485	0,850	1,720	1,856
Newness of product class	1,055	-0,336	0,253	-1,711
Newness of customer need being satisfied	-0,389	-1,324	-0,244	-1,510
Newness of the production process	0,790	-0,930	0,211	-1,735
Newness of technology	0,527	-1,297	0,169	-1,629
Newness of distributors being utilized	3,076	9,626	2,246	3,937
Newness of competitors to the company	1,339	0,297	1,409	0,757
Innovativeness of product	-0,286	-1,633	0,242	-1,625
Level of product technological complexity	0,689	-0,701	0,895	-0,477
Price of product relative to company's existing products	0,188	-1,398	0,363	-1,422
Clarity of market's specification of product	-0,577	-0,334	0,028	-1,044
Magnitude of the required investment	-0,196	-1,148	0,027	-1,027
Presence of product in parent company country	0,153	-1,637	0,127	-1,735
Level of new product project risk	-0,037	-0,707	-0,400	-0,658

APPENDIX D

THE FACTORS AND THE VARIABLES

REPRESENTED BY THE FACTORS

* FACTOR ONE : PRODUCTION, FINANCIAL AND MANAGERIAL SYNERGY AND PROFICIENCY (16,9%)

VARIABLE	VARIABLE LOADING
Compatibility of production resources	0,821
Adequacy of financial resources	0,812
Compatibility of engineering skills	0,805
Existence of a favourable corporate image	0,781
Adequacy of managerial skills	0,650
Competency of pilot production	0,455
Establishment of a new product committee	0,453
Competency of preliminary technical assessment	0,445
Sufficiency of advertising budget	0,340

* FACTOR TWO : MARKETING KNOWLEDGE AND PROFICIENCY (9%)

VARIABLE	VARIABLE LOADING
Competency of the consideration of cost prices, selling prices and the resultant demand levels	0,780
Adequacy of market research resources	0,687
Competency of preliminary market assessment	0,655
Familiarity with the buyer behaviour	0,604
Familiarity with the market size	0,571
Clarity of the specification of the product by the marketplace	0,495
Proficiency of promotional campaign	0,492
Familiarity with buyer price sensitivity	0,416

* FACTOR THREE : PRODUCT UNIQUENESS AND SUPERIORITY (7,1%)

VARIABLE	VARIABLE LOADING
Superiority of the product in need satisfaction	0,753
Uniqueness of product features offered	0,699
Product quality relative to competing products	0,693
Market derived new product idea	0,616
Familiarity with the competitive situation	0,567

* FACTOR FOUR : PRODUCT TECHNICAL COMPLEXITY (6,3%)

VARIABLE	VARIABLE LOADING
Newness of the production process	0,861
Newness of technology	0,831
Level of product technological complexity	0,668
Familiarity with required technology	-0,667
Newness of product class	0,553
Newness of consumer need being satisfied to the company	0,518

* FACTOR FIVE : PARENT COMPANY INVOLVEMENT IN NEW PRODUCT DEVELOPMENT (4,7%)

VARIABLE	VARIABLE LOADING
Parent company provision of skills and resources	0,954
Extent of parent company involvement in the development of the product	0,834

* FACTOR SIX : MARKET COMPETITIVENESS (4,4%)

VARIABLE	VARIABLE LOADING
Existence of a dominant competitor	0,821
Competitiveness of market	0,750
Intensity of price competition in market	0,546
Innovativeness of the product	-0,507

* FACTOR SEVEN : NEW PRODUCT DEVELOPMENT ORGANISATION STRUCTURE AND MARKET DYNAMISM (4,2%)

VARIABLE	VARIABLE LOADING
Appointment of new product manager	0,776
Establishment of new product department	0,772
Speed of changes in the market's customer needs	0,628
Frequency of new product introductions in the market	0,482

* FACTOR EIGHT : STRENGTH OF MARKETING COMMUNICATIONS AND LAUNCH EFFORT (3,3%)

VARIABLE	VARIABLE LOADING
Appropriate and targetted sales force launch efforts	0,703
Compatibility of current sales force	0,535
Consideration of potential attitudes of distributors	0,488
Willingness of distributors to stock the product	0,484
Competency of test market	0,428

* FACTOR NINE : RELATIVE PRICE OF THE PRODUCT (3,1%)

VARIABLE	VARIABLE LOADING
Product prive relative to competing products' prices	0,823
Price of product relative to company's existing products'prices	0,724

* FACTOR TEN : MARKET SIZE AND GROWTH AND LEVEL OF RISK (2,7%)

VARIABLE	VARIABLE LOADING
Level of new product project risk	0,673
Market size	0,562
Market growth rate	0,528

* FACTOR ELEVEN : PRODUCTION CAPACITY (2,6%)

VARIABLE	VARIABLE LOADING
Adequate production volume for demand	0,812
Readiness of production facilities	0,595

* FACTOR TWELVE : COMPETENCY OF IDEA AND CONCEPT TESTING (2,5%)

VARIABLE	VARIABLE LOADING
Competent evaluation of alternative new product ideas	0,667
Product's ability to reduce customer costs	0,522
Use of pre-test market research techniques	0,357

* FACTOR THIRTEEN : INVESTMENT MAGNITUDE (2,4%)

VARIABLE	VARIABLE LOADING
Magnitude of the required investment	0,797

* FACTOR FOURTEEN : EXTENT OF BRAND MANAGER'S INVOLVEMENT AND PREVIOUS LAUNCHES OVERSEAS (2,2%)

VARIABLE	VARIABLE LOADING
Extent of brand manager's involvement in new product development	0,811
Presence of product in parent company country	0,403

* FACTOR FIFTEEN : FAMILIARITY WITH CUSTOMERS IN THE MARKETPLACE (2,1%)

VARIABLE	VARIABLE LOADING
Newness of customers	0,804

* FACTOR SIXTEEN : CUSTOMER DISSATISFACTION WITH COMPETING PRODUCTS (2,0%)P

VARIABLE	VARIABLE LOADING
Customer dissatisfaction with competing products	0,852

* FACTOR SEVENTEEN : GOVERNMENT ACTIVITY IN THE MARKETPLACE (1,9%)

VARIABLE	VARIABLE LOADING
Extent of government intervention and legislation in market	0,861

* FACTOR EIGHTEEN : FAMILIARITY WITH COMPETITORS AND DISTRIBUTORS IN THE MARKETPLACE (1,7%)

VARIABLE	VARIABLE LOADING
Newness of competitors to the company	0,775
Newness of distributors being utilized	0,432

* FACTOR NINETEEN : STRENGTH OF BRAND NAME AND ESTABLISHMENT OF A VENTURE TEAM (1,7%)

VARIABLE	VARIABLE LOADING
Strength of brand name	0,801
Establishment of a venture team	-0,434

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