New Product Development

Once a company has carefully segmented the market, chosen its target customers, identified their needs, and determined its market positioning, it is better able to develop new products. Marketers play a key role in the new-product process, by identifying and evaluating new-product and working with R & D and others in every stage of development.

Every company must develop new products. New-product development shapes the company's future. Replacement products must be created to maintain or build sales. Customers want new products, and competitors will do their best to supply them. Each year over 16,000 new products (including line extensions and new brands) are introduced into groceries and drugstores.

A company can add new products through acquisition or development. The acquisition route can take three forms. The company can buy other companies, it can acquire patents from other companies, or it can but a licence or franchise from another company. The development route can take two forms. The company can develop new products in its own laboratories. Or it can contract with independent researchers or new-product development firms to develop specific new products.

Booz, Allen and Hamilton had identified six categories of new products :

1. New-to-the-world products : New products that create an entirely new market.
2. New product lines : New products that allow a company to enter an established market for the first time.
3. Additions to existing product lines : New products that supplement a company's established product lines (package sizes, flavours, and so on).
4. Improvements and revisions of existing products : New products that provide improved performance or greater perceived value and replace existing products.
5. Repositionings: Existing products that are targeted to new markets or market segments.

6. Cost reductions: New products that provide similar performance at lower cost.

- It was also observed that less than 10% of the new products are truly innovative and new to the world.
- Such products involve higher costs and risks because they are both, new to the companies and to the markets.
- Most of the new products are improvements in existing products. Most companies rarely innovate, some innovate occasionally. Very few companies innovate continuously, for example, Sony, 3M, Oracle, Microsoft, etc. created a positive attitude toward innovation and risk taking and have routinised the innovation process through teamwork, allowing people to experiment and even fail.
- They have realised that in an economy characterised by rapid changes, continuous innovation is necessary and an inevitable practice.

Why New Products Fail?

Some of the important reasons for product failure are as follows:

- The idea may be good but the market size is over saturated
- Top executives may push their favourite idea through
- The product may not be well designed
- The product may be incorrectly positioned in the market, or it may not be effectively advertised or may be over
- priced Products may fail due to lack of sufficient distribution coverage or support
- The development costs of the new product are very high
- Competition may fight back harder than expected
- Customer reactions are unfavourable.

Challenges to New Product Development

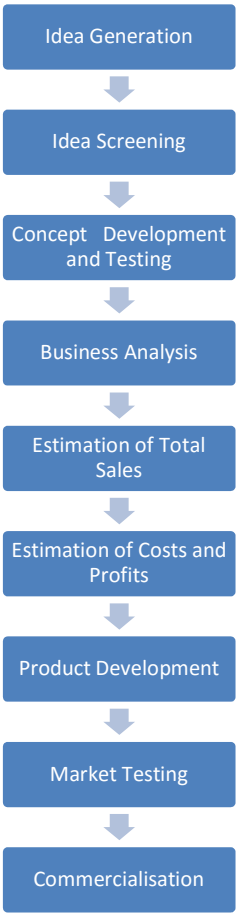
The development and positioning of a new product in the market has become a costly and risky affair under the modern dynamic environment. There are several challenges that need to be faced.

Some of these are stated below:

- Cost of development that covers research and development, manufacturing marketing, etc. tends to be high.
- There is an increase in domestic and foreign competition.
- A shortage of innovative ideas: Very few areas left to be improved with some basic products like steel, detergents, etc.
- Fragmented markets: When companies aim at selling their new products to the sellers markets, it results in lower sales and profits for each of the producers.
- Social and governmental constraints: New products have to satisfy needs of consumer safety and protection of environment.
- Capital Shortages as compared to heavy demand for investment in research and development.
- Failure to attain a faster rate of development: A new firm needs to reduce the development time to overcome competition.
- Need to develop unique and superior products that have chances of success.
- Achievement of technological and marketing synergy, quality of execution and market attractiveness.
- Development of appropriate organisational arrangements in spite of resistance of employees.

Steps in the Development of the New Product

With a company's new product strategy as a guide, the development of a new product proceeds in stages they are as discussed below:



Steps in the development of the product

Idea generation

- Ideas for new products can come from customers, employers, competitors, channel members, scientists and top managers.
- Generally customer needs and wants are where the highest percentage of ideas originates.
- They are able to give suggestions for improvements in the existing products.
- Employees in the company too2 can suggest ideas for improving a product, for example, Toyota claims that its employees suggest about 2 million ideas annually, i.e., 35 suggestions per employee, of which over 85% are implemented.
- Some companies like Kodak give monetary benefits, holidays and recognition awards to employees for their suggestions.

- Companies also find good ideas by looking into the competitor's products and services.
- They can find out the customer's likes and dislikes about the competitors products.
- They may buy the competitors' products, take them apart and develop better products.
- The company's salespersons and intermediates also suggest new ideas as they are in close contact with customers.
- Sometimes ideas may come from inventors, patent attorneys, universities, laboratories, industrial consultants, advertising agencies or marketing research firms, etc.

Idea screening

When the idea manager receives new ideas from employees, an idea committee reviews these ideas each week.

These ideas are then classified into three categories as

- Promising ideas
- Marginal ideas
- Rejects
- A committee member then researches each promising idea and reports them to the committee.
- The surviving ideas then move into a full scale screening process. While screening the ideas, the company has to avoid two types of errors.

A drop error: It takes place when the company rejects an otherwise good idea, hence, while dismissing an idea, great care has to be taken.

A go error :It occurs when the company accepts a poor idea to move into development and commercialisation.

Concept development and testing : A product concept is an elaborated version of the idea expressed in meaningful consumer terms. The company should identify which group of customers e.g. infants, teenagers, adults would use the product and its primary benefits. Concept testing involves presenting the product concept to appropriate target consumers and getting their reactions)

Business analysis: Its aim is to evaluate the proposal's business attractiveness. Estimates on future sales, costs, and profits are done to determine whether they satisfy company objectives.

Estimation of total sales: The total estimated sales include the total of estimated first time sales, replacement sales and repeat sales.

Estimation of costs and profits

- Costs are estimated by research and development, manufacturing, marketing and finance departments.
- Companies use the technique of break level analysis to estimate how many units of the product should be sold to break-even at a given price and cost structure.
- If the management concludes that sales would easily reach the break-even point, product development can take place.
- For the purpose of estimating profit, the risk analysis method is used.
- According to this risk analysis method, three estimates- (Optimistic, Pessimistic and most likely) are obtained for each uncertain variable affecting profitability under the assumed marketing strategy and market environment for the period covered by the plan.
- With the help of computer simulation, the possible outcomes and the rate of return are estimated.

Product development

- During the product development stage, the management determines whether the product idea can be translated into a technically and commercially feasible product.
- If not, then the product idea will be dropped.
- If the product idea is observed to be feasible, then a set of methods known as Quality Function Deployment (QFD) are applied for translating the job of the target customer requirements into a working prototype.
- For this purpose, the list of consumer-designed attributes supplied by market research are converted into engineering attributes, which are then used by the engineering department to put them into practice.

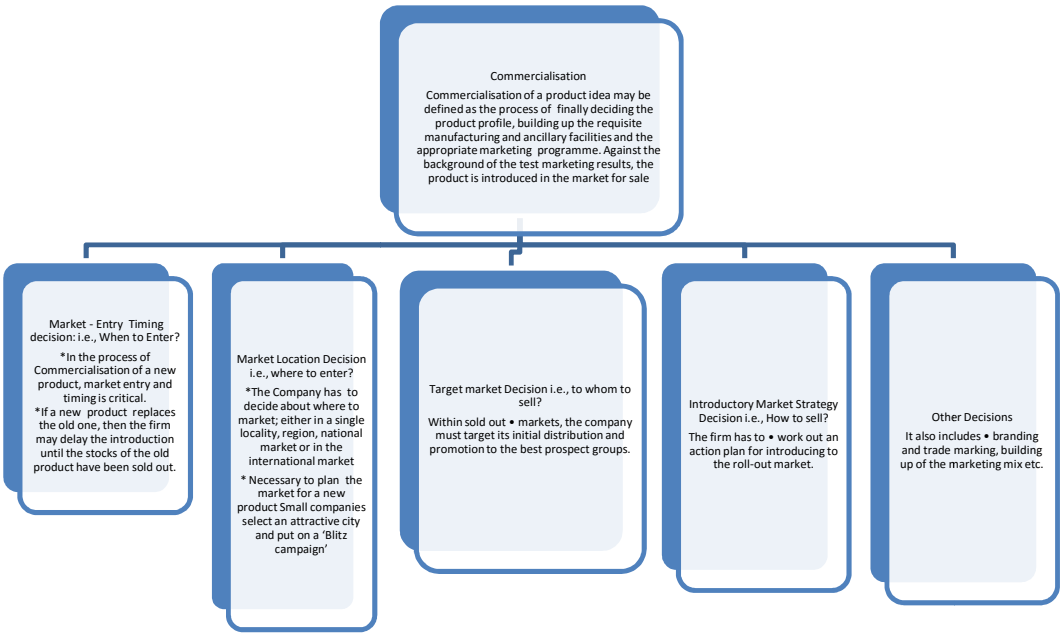
- The research and development department develops one or more physical versions of the product concept.
- It tries to find a prototype that includes the key attributes described in the product concept statement that performs safely during normal use and under normal conditions and it can be produced within the budgeted manufacturing costs.
- Developing and manufacturing a prototype may take months or even years.
- However, modern sophisticated virtual reality technology is useful in speeding up the process.
- With the rise of the World Wide Web, it has become easier to have more rapid proto typing and a more flexible developmental process.
- When the prototype is ready, it has to be put to rigorous functional tests and customer tests.
- Alfa Testing is the procedure of testing a product within the firm to see its performance in different applications.
- After refining the prototype further, beta testing is to be applied.
- A set of customers are selected for using the prototype and to give feedback.
- Beta testing is useful when potential customers are heterogeneous, the potential applications are not fully known.
- Several decision makers are involved in purchasing the product and the opinion of the early users is sought.

Market testing

- Once the management is satisfied with the functional and physiological performance, the product is ready to be dressed up with a brand name and package and to be put to a market test.
- The new product is introduced in the market to know how the dealers, retailers and consumers react to it.
- Many companies do not undertake market testing.
- Market testing depends upon the cost of investment and risk on the one hand, and the time pressure and research cost on the other.

- High investment, high-risk products where the chances of failure are very high, must be market tested as the cost of the market test is insignificant as compared to the total project cost.

Commercialisation



Commercialization: This is when the product is launched to the market on a full scale. Questions to answer:-

- When?
- Where?
- To whom

When (timing): If a company learns that its competitor is about to launch a similar product in the market, it has three options; First entry; the first firm that enters a market usually enjoys the advantages of hooking up key distributors and customers. But if the product is rushed to the market it may fail.

Parallel entry; the firm might time its entry to coincide with the competitor's entry. The market may pay more attention when two companies are advertising the new product. Late entry; the firm might delay its launch until

after the competitor has entered. The competitor will have borne the cost of educating the market and its product may reveal faults that the late entrant can avoid.

If a new product replaces an older product, the company might delay introduction until the old product's stock is finished. If the product is seasonal, it might be delayed until the right season arrives.

***Where (geographic strategy*)** The company must decide whether to launch the new product in a single locality or several regions. Factors to consider:

- Company size; small companies will first enter an attractive city with a heavy promotional campaign and enter others one at a time.
- Cost of communication media.
- Competitive penetration
- Market potential and knowledge

To whom (Target- market prospects)

The company must target its initial distribution and promotion to the best prospect groups who would have the following characteristics; Early adopters, heavy users, opinion leaders, reached at a low cost, etc.

PRODUCT MANAGEMENT

CHAPTER 4

Introduction:

A product can be defined as a collection of physical, service and symbolic attributes which yield satisfaction or benefits to a user or buyer. Product is a key element in the market offering. Marketing-mix planning begins with formulating an offering to meet target customer's needs or wants. The customer will judge the offering by three basic elements: product features and quality, services mix and quality, and price appropriateness. All three elements must be meshed into a competitively attractive offering. It is the need satisfying offering of an enterprise. When consumers buy a product, they are actually buying satisfaction or the benefits that the product would offer.

A physical product can be viewed at five levels;
1. *Core product*; This is the most basic level. It addresses the question; what is the customer really buying? It consists of the problem solving or core benefits that consumers obtain when they buy a product.
2. *Basic product*; It is a product's physical parts i.e. its features, brand name, packaging and other attributes that combine to deliver the core product benefits.
3. *Expected product*; It is a set of attributes and conditions consumers normally expect when they purchase the product.
4. *Augmented product*; It is the part of a product which exceeds customer expectations.
5. *Potential product*; It encompasses all the possible augmentations and transformations the product might undergo in the future.

Product Management : Product management is an organizational life cycle function within a company dealing with the planning or marketing of a product or products at all stages of the product life cycle. Product management and

product marketing are different yet complementary efforts with the objective of maximizing sales revenues, market share, and profit margins. Product Management Process starts with the type of company one works for. There may be companies that are:

1. Technology-driven
2. Company driven
3. Sales-driven
4. Market-driven

Product Manager's primary role is to serve as the "voice of the customer". Thus product management includes indirect management and cooperation with other members of various groups other members of various groups. The day to day work revolves around executing four main tasks:

1. Developing the market requirements document
2. Managing the product feature list
3. Coordinating activities of different functional groups
4. Participating in and/or running the launch and post-launch marketing activities for a product.

The goal of product management is to:

1. Ensure a market-driven "whole" product offering
2. Establish competitive and profitable pricing models
3. Ensure the existence and support of product distribution
4. Create effective marketing promotions that generate revenue

Classification of products

Products can be classified into
i)consumer and
ii) business products.

Consumer goods are those bought by final consumers for personal consumption. Industrial / business/organizational products are those bought to be used in the production of other goods and services.

Types of consumer products: They include; convenience products, shopping products, specialty products, and unsought products.

1. *Convenience products*; They are those goods that the customer usually buys frequently, immediately and with a minimum of comparison and buying effort. They are usually low priced and widely available. They are of two main types;
a) Staples; are those that are bought often, routinely and without much thought.
b) Impulse/emergency products; are those that are bought because of a strongly felt need. The consumer will not have planned to buy and only decides to do so on sight.

2. *Shopping goods*; They are products that a customer feels are worth the time and effort to compare with other products on suitability, quality, price etc. they are of two types;
a) Homogenous shopping goods; are those the customer sees as basically the same and selects one with the lowest price e.g. T.V.s, music systems.
b) Heterogeneous shopping goods; are those the consumer sees as different and wants to compare for quality and suitability e.g. furniture and clothing.

3. *Specialty goods*; They are those that the customer wants and makes a special purchase effort to search for them because of their unique characteristics or brand identification. Customers have specific expectations of the product and substitutes would not be accepted e.g. cars like Ferrari, clothes like Calvin Klein.

4. *Unsought goods*; These are products that potential customers don't know about or know about them but do not normally think of buying. They don't search for them and won't buy if they see them unless promotional effort is undertaken. They include life insurance. They are of two types;
a. New unsought products; are those offering really new ideas that potential customers don't know about yet. Informative promotions can help convince customers to accept these products.
b. Regularly unsought products; they are products which may satisfy a certain need but potential customers are not motivated to satisfy it. Personal selling is usually used to persuade customers to buy.

Types of business/industrial/organisational products: Installations, accessories, raw materials, component parts, and office Supplies.

1. *Installations*; They are such as buildings and heavy machinery used in manufacturing. They are durable products therefore they are not bought very often. They are usually expensive hence many people including top management are involved in the purchase decision and purchase negotiations may take a long time. To achieve buyer satisfaction suppliers offer special after-sales services.

2. *Accessories*; Include tools and equipment such as fax machines, computers, photocopiers etc. They cost less and are less durable than installations therefore fewer people are involved in the purchase process and negotiations take a shorter time.

3. *Raw materials*; These are unprocessed farm products (e.g. cotton, wheat, leather) or natural raw materials e.g. timber, oil, mineral ore, that are moved to the next stage in the production process with little or no handling to produce a company's finished products.

4. *Component parts*; Are processed items that become part of a finished product e.g. batteries, tyres, etc.They are bought from another supplier and their quality is paramount and the buyer tries to buy from sources that help assure good product quality.

5.Supplies; These are items that do not become part of a finished product. They include the following;-

- Repair and maintenance supplies e.g. nuts, bolts and lubricating oil.
- Operating supplies that include stationery and electricity.
- Professional services; these are specialised services such as catering, security and computer maintenance services that are outsourced by the company.

Product Planning

Product Planning is the ongoing process of identifying and articulating market requirements that define a product's feature set.

Defining New Products: It is important to define the products and services you want to promote. Ideas for new products can be obtained from basic research

using a SWOT analysis and/or brainstorming of new product, service, or store concepts.

Market Requirements: This is helped by analyzing market and consumer trends, competitors, focus groups, corporate spies, trade shows, or ethnographic discovery methods.

Building Product Roadmaps, Particularly Technology Roadmaps: A great roadmap walks the fine line between being too narrow ("a one-trick pony") and too wide ("all over the map"). Demonstrate focus by building your plan and presentation to spend the most time on your initial products. Size the markets conservatively, and pick realistic penetration rates. Roadmaps are always subject to change.

Product Life Cycle Considerations: The idea of a product life cycle acknowledges the fact that designing and selling a product is only part of the story. In fact, every product goes through a series of steps between the time it is first conceived and the time the manufactured product is retired or discarded.

Product Differentiation: Product differentiation (also known simply as "differentiation") is the process of distinguishing the differences of a product or offering from others, to make it more attractive to a particular target market. This involves differentiating it from competitors' products as well as one's own product offerings.

Product Mix

Product mix is a combination of products manufactured or traded by the same business house to reinforce their presence in the market, increase market share and increase the turnover for more profitability. Normally the product mix is within the synergy of other products for a medium size organization. However large groups of Industries may have diversified products within core competency. Larsen & Toubro Ltd, Godrej etc.

One of the realities of business is that most firms deal with multi-products .This helps a firm diffuse its risk across different product groups/Also it enables the firm to appeal to a much larger group of customers or to different needs of the

same customer group .So when Videocon chose to diversify into other consumer durables like music systems, washing machines and refrigerators, it sought to satisfy the needs of the middle and upper middle income group of consumers

Likewise, Bajaj Electricals a household name in India has almost ninety products in its portfolio ranging from low value items like bulbs to high priced consumer durables like mixers and luminaries and lighting projects .The number of products carried by a firm at a given point of time is called its product mix. This product mix contains product lines and product items .In other words it's a composite of products offered for sale by a firm.

A product mix is the range of products a company offers i.e. the set of all products and items that a particular seller offers for sale. It is also called a company's product portfolio. A product mix may consist of several product lines.

- A product mix can be described as having a certain breadth, length, depth and consistency.
- A product mix breadth refers to the number of different product lines the company offers e.g. detergents, toothpastes and lotions.
- Product mix length is the total number of items the company offers, i.e. different brands and package sizes.
- The depth of the mix is the number of versions offered of each product in a product line, e.g. different versions/brands of cooking oil.
- Product-mix consistency refers to how closely related a company's product lines are in production requirements or end-use.

Product line:

A product line is a group of products that are closely related either because they function in a similar manner or are sold through the same type of retail outlets e.g. cosmetics, cooking fats and detergents etc.

It is a similar group of products that are sold by the company under the same brand. A company may sell multiple products under one product line and it can also have same product line under its brand.

Product-line decisions are concerned with the combination of individual products offered within a given line. The product-line manager supervises several product managers who are responsible for individual products in the line. Decisions about a product line are usually incorporated into a marketing plan at the divisional level. Such a plan specifies changes in the product lines and allocations to products in each line.

Generally, product-line managers have the following responsibilities:
(1) considering expansion of a given product line;
(2) considering candidates for deletion from the product line;
(3) evaluating the effects of product additions and deletions on the profitability of other items in the line; and
(4) allocating resources to individual products in the line on the basis of marketing strategies recommended by product managers.

BRANDING

: A brand is any name, term, symbol, sign, design, or unifying combination of these. A brand name is the verbal part of the brand. For example, Lux, Usha and Rediff.com are brands. When these words are spoken or written, they are brand names. Many branded goods and services rely heavily on some symbol for identification. Asian Paints, makes considerable use of a boy named Gattu and Microsoft Windows is represented by a window that materializes out of an expanding pattern of rectangles floating to its left. Such unique symbols are referred to as brand marks: A brand name or company name written in a distinctive way—for example, Coca-Cola written in white script letters on a red background—is called a logo, short for logotype.

Types of brands

1. Individual product branding; Under here every product has its own brand name without any obvious connection to other brands – Unilever, Procter and Gamble.

2.Family branding; This refers to selling related products under one family/ blanket name e.g. Nice & lovely

3.Co-branding; This is where one firm partners with another to create a brand e.g. credit card companies and banks e.g. Citibank MasterCard.

4. Private /store branding; This means when large retailers contract with manufacturers to produce the retailer's own branded products e.g. Ukwala sugar/ cooking fats.

5. Generic branding; This is offering a brandless product. They are seen as low price alternatives that are affordable to buyers

6. Brand licensing: It is a contractual arrangement where a firm that owns a brand name allows others to produce and sell non- competing products using the same brand name e.g. Nike watches.

7. Multi brand strategy; This refers to offering two or more brand names in the same product category e.g. cooking fat.

Qualities of a good brand name

- Should be protectable under trademark law.
- Easy to remember.
- Easy to recognise.
- Not portray negative meaning in any language of potential customers.
- Attract attention.
- Suggest product benefits.
- Should suggest good company or brand image.
- Distinguish the product's positioning relative to competition.
- Should be associated with a positive value or characteristic e.g. pilsner

Importance of Branding

- Product identification is eased. A customer can order a product by name instead of description.
- Customers are assured that a good or service has a certain level of quality and that they will obtained comparable quality if the same brand is reordered.

- The firm responsible for the product is known. Unbranded items cannot be as directly identified.
- Price comparisons are reduced when customers perceive distinct brands. This is most likely if special attributes are linked to different brands.
- A firm can advertise (position) its products and associate each brand and its characteristics in the buyer's mind. This aids the consumer in forming a brand image, which is the perception a person has of a particular brand.
- Branding helps segment markets by creating tailored images. By using two or more brands, multiple market segments can be attracted. l For socially-visible goods and services, a product's prestige is enhanced via a strong brand name.
- People feel less risk when buying a brand with which they are familiar and for which they have a favourable attitude. This is why brand loyalty occurs.
- Cooperation from resellers is greater for well-known brands. A strong brand also may let its producer exert more control in the distribution channel.
- A brand may help sell an entire line of products, such as Britannia Biscuits.
- A brand may help enter a new product category, like Sansung Mobile.
- Ultimately, the power of a brand lies in the minds of consumers, in what, they have experienced and learned about the brand over time. Consumer knowledge is really at the heart of brand equity.

Packaging

Packaging is the part of product planning where a firm researches, designs, and produces package(s). A package is a container used to protect, promote, transport, and/or identify a product. It may consist of a product's physical container, an outer label, and/ or inserts. The physical container may be a cardboard, metal, plastic, or wooden box; a cellophane, waxpaper, or cloth wrapper; a glass, aluminium, or plastic jar or can; a paper bag; styrofoam; some other material; or a combination of these. Products may have more than

one container : Cereal is individually packaged in small boxes, with inner waxpaper wrapping, and shipped in large corrugated boxes; watches are usually covered with cloth linings and shipped in plastic boxes. The label indicates a product's brand name, the company logo, ingredients, promotional messages, inventory codes, and/or instructions for use. Inserts are (1) instructions and safety information placed in drug, toy, and other packages or (2) coupons, prizes, or recipe booklets. They are used as appropriate.

Developing an effective package for a new product requires several decisions. The first task is to establish the packaging concept : defining what the package should basically be or do for the particular product. Decisions must now be made on additional elements—size, shape, materials, colour, text, and brand mark. Decisions must be made on the amount of text, on cellophane or other transparent films, on a plastic or a laminate tray, and so on. Decisions must be made on "tamperproof" devices. The various packaging elements must be harmonized. The packaging elements must also be harmonized with decisions on pricing, advertising, and other marketing elements.

After the packaging is designed, it must be tested. Engineering tests are conducted to ensure that the package stands up under normal conditions; visual tests, to ensure that the script is legible and the colours harmonious; dealer tests, to ensure that dealers find the packages attractive and easy to handle; and consumer tests, to ensure favourable consumer response.

Packaging functions

- Containment and protection—Packaging enables liquid, granular and other divisible products to be contained in a given quantity and form. It protects a product while it is shipped, stored, and handled.
- Usage—Packaging lets a product be easily used and re-stored. It may even be reusable after a product is depleted. Packaging must also be safe for all, from a young child to a senior.

- Communication—Packaging communicates a brand image, provides ingredients and directions, and displays the product. It is a major promotion tool.
- Segmentation—Packaging can be tailor-made for a specific market group. If a firm offers two or more package shapes, sizes, colours, or designs, it may employ differentiated marketing.
- Channel cooperation—Packaging can address wholesaler and retailer needs with regard to shipping, storing, promotion and so on.
- New-product planning—New packaging can be a key innovation for a firm and stimulate sales.

Labelling

Sellers must label products. The label may be a simple tag attached to the product or an elaborately designed graphic that is part of the package. The label might carry only the brand name or a great deal of information. Even if the seller prefers a simple label, the law may require additional information.

Labeling not only serves to express the contents of the product, but may be promotional The EU is now putting very stringent regulations in force on labeling, even to the degree that the pesticides and insecticides used on horticultural produce have to be listed. This could be very demanding for producers, especially small scale, ones where production techniques may not be standardized. Government labeling regulations vary from country to country. Bar codes are not widespread in Africa, but do assist in stock control. Labels may have to be multilingual, especially if the product is a world brand. Translation could be a problem with many words being translated with difficulty. Again labeling is expensive, and in promotion terms non-standard labels are more expensive than standard ones. Requirements for crate labeling, etc. for international transportation will be dealt with later under documentation.

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PRODUCT LIFE CYCLE MANAGEMENT

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Thessaloniki 2002

CONTENTS

INTRODUCTION

All products and services have certain life cycles. The life cycle refers to the period from the product's first launch into the market until its final withdrawal and it is split up in phases. During this period significant changes are made in the way that the product is behaving into the market i.e. its reflection in respect of sales to the company that introduced it into the market. Since an increase in profits is the major goal of a company that introduces a product into a market, the product's life cycle management is very important. Some companies use strategic planning and others follow the basic rules of the different life cycle phase that are analyzed later.

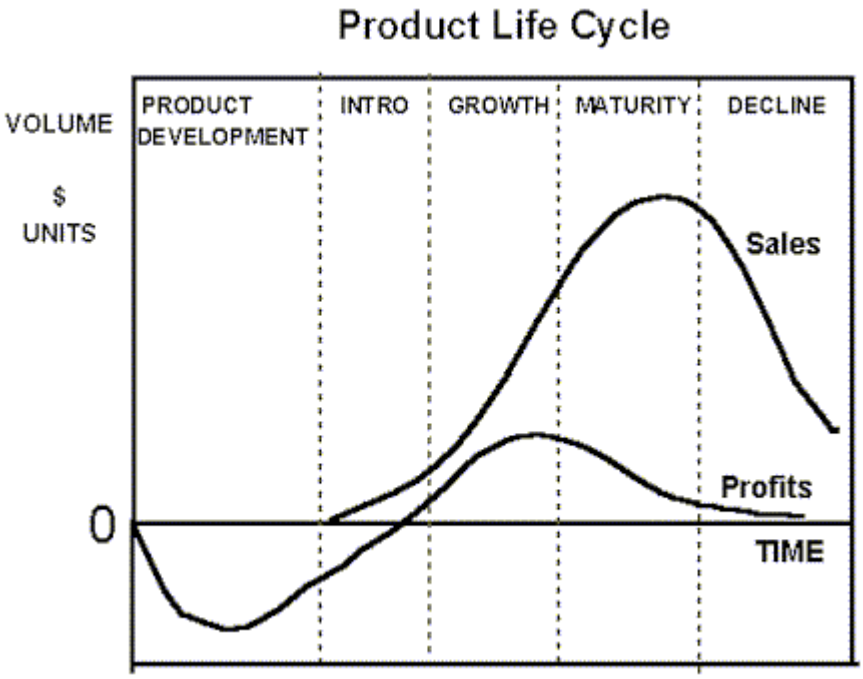
The understanding of a product's life cycle, can help a company to understand and realize when it is time to introduce and withdraw a product from a market, its position in the market compared to competitors, and the product's success or failure.

For a company to fully understand the above and successfully manage a product's life cycle, needs to develop strategies and methodologies, some of which are discussed later on.

PART 1: PRODUCT LIFE CYCLE MODEL DESCRIPTION

The product's life cycle - period usually consists of five major steps or phases: Product development, Product introduction, Product growth, Product maturity and finally Product decline. These phases exist and are applicable to all products or services from a certain make of automobile to a multimillion-dollar lithography tool to a one-cent capacitor. These phases can be split up into smaller ones depending on the product and must be considered when a new product is to be introduced into a market since they dictate the product's sales performance.

Fig. 1: Product Life Cycle Graph



Source: William D.

1. PRODUCT DEVELOPMENT PHASE

Product development phase begins when a company finds and develops a new product idea. This involves translating various pieces of information and incorporating them into a new product. A product is usually undergoing several changes involving a lot of money and time during development, before it is exposed to target customers via test markets. Those products that survive the test market are then introduced into a real marketplace and the introduction phase of the product begins. During the product

development phase, sales are zero and revenues are negative. It is the time of spending with absolute no return.

2. INTRODUCTION PHASE

The introduction phase of a product includes the product launch with its requirements to getting it launch in such a way so that it will have maximum impact at the moment of sale. A good example of such a launch is the launch of “Windows XP” by Microsoft Corporation.

This period can be described as a money sinkhole compared to the maturity phase of a product. Large expenditure on promotion and advertising is common, and quick but costly service requirements are introduced. A company must be prepared to spent a lot of money and get only a small proportion of that back. In this phase distribution arrangements are introduced. Having the product in every counter is very important and is regarded as an impossible challenge. Some companies avoid this stress by hiring external contractors or outsourcing the entire distribution arrangement. This has the benefit of testing an important marketing tool such as outsourcing.

Pricing is something else for a company to consider during this phase. Product pricing usually follows one or two well structured strategies. Early customers will pay a lot for something new and this will help a bit to minimize that sinkhole that was mentioned earlier. Later the pricing policy should be more aggressive so that the product can become competitive. Another strategy is that of a pre-set price believed to be the right one to maximize sales. This however demands a very good knowledge of the market and of what a customer is willing to pay for a newly introduced product.

A successful product introduction phase may also result from actions taken by the company prior to the introduction of the product to the market. These actions are included in the formulation of the marketing strategy. This is accomplished during product development by the use of market research. Customer requirements on design, pricing, servicing and packaging are invaluable to the formation of a product design. A customer can tell a company what features of the product are appealing and what are the characteristics that should not appear on the product. He will describe the

ways of how the product will become handy and useful. So in this way a company will know before its product is introduced to a market what to expect from the customers and competitors. A marketing mix may also help in terms of defining the targeted audience during promotion and advertising of the product in the introduction phase.

3. GROWTH PHASE

The growth phase offers the satisfaction of seeing the product take-off in the marketplace. This is the appropriate timing to focus on increasing the market share. If the product has been introduced first into the market, (introduction into a "virgin"[1] market or into an existing market) then it is in a position to gain market share relatively easily. A new growing market alerts the competition's attention.

The company must show all the products offerings and try to differentiate them from the competitors ones. A frequent modification process of the product is an effective policy to discourage competitors from gaining market share by copying or offering similar products. Other barriers are licenses and copyrights, product complexity and low availability of product components.

Promotion and advertising continues, but not in the extent that was in the introductory phase and it is oriented to the task of market leadership and not in raising product awareness. A good practice is the use of external promotional contractors.

This period is the time to develop efficiencies and improve product availability and service. Cost efficiency and time-to-market and pricing and discount policy are major factors in gaining customer confidence. Good coverage in all marketplaces is worthwhile goal throughout the growth phase.

Managing the growth stage is essential. Companies sometimes are consuming much more effort into the production process, overestimating their market position. Accurate estimations in forecasting customer needs will provide essential input into

[1] A good example of a "virgin" market can be considered the market of China. This market was closed to most western companies and their products and is slowly opening up to new products and services.

production planning process. It is pointless to increase customer expectations and product demand without having arranged for relative production capacity. A company must not make the mistake of over committing. This will result into losing customers not finding the product "on the self".

4. MATURITY PHASE

When the market becomes saturated with variations of the basic product, and all competitors are represented in terms of an alternative product, the maturity phase arrives. In this phase market share growth is at the expense of someone else's business, rather than the growth of the market itself. This period is the period of the highest returns from the product. A company that has achieved its market share goal enjoys the most profitable period, while a company that falls behind its market share goal, must reconsider its marketing positioning into the marketplace.

During this period new brands are introduced even when they compete with the company's existing product and model changes are more frequent (product, brand, model). This is the time to extend the product's life.

Pricing and discount policies are often changed in relation to the competition policies i.e. pricing moves up and down accordingly with the competitors one and sales and coupons are introduced in the case of consumer products. Promotion and advertising relocates from the scope of getting new customers, to the scope of product differentiation in terms of quality and reliability.

The battle of distribution continues using multi distribution channels[2]. A successful product maturity phase is extended beyond anyone's timely expectations. A good example of this is "Tide" washing powder, which has grown old, and it is still growing.

5. DECLINE PHASE

[2] Multi distribution channel is one that offers back up distribution ways. A good example is the use of retail stores and the use of Internet. The former requires a completely different distribution channel than the latter and a product usually is distributed through the former first.

The decision for withdrawing a product seems to be a complex task and there a lot of issues to be resolved before with decide to move it out of the market. Dilemmas such as maintenance, spare part availability, service competitions reaction in filling the market gap are some issues that increase the complexity of the decision process to withdraw a product from the market. Often companies retain a high price policy for the declining products that increase the profit margin and gradually discourage the “few” loyal remaining customers from buying it. Such an example is telegraph submission over facsimile or email. Dr. M. Avlonitis from the Economic University of Athens has developed a methodology, rather complex one that takes under consideration all the attributes and the subsequences of product withdrawal process.

Sometimes it is difficult for a company to conceptualize the decline signals of a product. Usually a product decline is accompanied with a decline of market sales. Its recognition is sometimes hard to be realized, since marketing departments are usually too optimistic due to big product success coming from the maturity phase.

This is the time to start withdrawing variations of the product from the market that are weak in their market position. This must be done carefully since it is not often apparent which product variation brings in the revenues.

The prices must be kept competitive and promotion should be pulled back at a level that will make the product presence visible and at the same time retain the “loyal” customer. Distribution is narrowed. The basic channel is should be kept efficient but alternative channels should be abandoned. For an example, a 0800 telephone line with shipment by a reliable delivery company, paid by the customer is worth keeping.

PART 2: ANALYSIS OF PRODUCT LIFE CYCLE MODEL

There are some major product life cycle management techniques that can be used to optimize a product's revenues in respect to its position into a market and its life cycle. These techniques are mainly marketing or management strategies that are used by most companies worldwide and include the know-how of product upgrade, replacement and termination. To comprehend these strategies one must first make a theoretical analysis of the model of product life cycle.

In the mid 70's the model of product life cycle described in "Part 1", was under heavy criticism by numerous authors. The reasons behind this criticism are described bellow:

a. The shift changes in the demand of a product along a period of time makes the distinction of the product life cycle phase very difficult, the duration of those almost impossible to predict and the level of sales of the product somewhat in the realm of the imagination.

b. There are many products that do not follow the usual shape of the product life cycle graph as shown in fig. 1[3].

c. The product life cycle does not entirely depend on time as shown in fig. 1. It also depends on other parameters such as management policy, company strategic decisions and market trends. These parameters are difficult to be pinpointed and so are not included in the product life cycle as described in "Part 1".

The model of product life cycle also depends on the particular product. There would be different models and so different marketing approaches. There are basically three different types of products: a product class (such as a cars), a product form (such as a station wagon, coupe, family car etc of a particular industry) and a product brand of that particular industry (such as Ford Escort). The life cycle of the product class reflects changes in market trend and lasts longer than the life cycle of the product

[3] Professor Cox was able to identify six different shapes of the product life cycle graph in a research of a 256 pharmaceutical products.

form or brand. In the other hand the life cycle of a product form or brand reflects the competitiveness of a company (i.e. sales, profits) and therefore follows more closely the product life cycle model.

Nevertheless, a product manager must know how to recognize which phase of its life cycle is a product, regardless of the problems in the model discussed above. To do that a good method is the one, suggested by Donald Clifford in 1965, which follows.

- Collection of information about the product's behavior over at least a period of 3 – 5 years (information will include price, units sold, profit margins, return of investment – ROI, market share and value).
- Analysis of competitor short-term strategies (analysis of new products emerging into the market and competitor announced plans about production increase, plant upgrade and product promotion).
- Analysis of number of competitors in respect of market share.
- Collection of information of the life cycle of similar products that will help to estimate the life cycle of a new product.
- Estimation of sales volume for 3 – 5 years from product launch.
- Estimation of the total costs compared to the total sales for 3 – 5 years after product launch (development, production, promotion costs). The estimate should be in the range of 4:1 in the beginning to 7:1 at the stage where the product reaches maturity.

Strategies that must be applied as soon as the phase of product life cycle is recognized are given in the table bellow.

Table 1: Strategies of each product life cycle phase

	Development Phase	Introduction Phase	Growth Phase	Maturity Phase	Decline Phase
Strategic Goal	Make your product known and establish a test period	Acquire a strong market position	Maintain your market position and build on it	Defend market position from competitors and improve your product	"Milk" all remaining profits from product
Competition	Almost not there	Early entry of aggressive competitors into the	Price and distribution channel pressure	Establishment of competitive environment	Some competitors are already withdrawing

		market			from market
Product	Limited number of variations	Introduction of product variations and models	Improvement – upgrade of product	Price decrease	Variations and models that are not profitable are withdrawn
Price Goal	High sales to middle men	Aggressive price policy (decrease) for sales increase	Re-estimation of price policy	Defensive price policy	Maintain price level for small profit
Promotion Goal	Creation of public – market product awareness	Reinforcement of product awareness and preference	Reinforcement of middle men	Maintain loyal to middle men	Gradual decrease
Distribution Goal	Exclusive and selective distribution through certain distribution channels and creation of high profit margins for middle men	General and reinforced distribution through all distribution channels available	General and reinforced distribution with good supply to the middle men but with low margins of profit for them	General and reinforced distribution with good supply to the middle men but with low margins of profit for them	Withdrawal from most channels of distribution except those used in the development phase

Source: Avlonitis G.

PART 3: PRODUCT LIFE CYCLE TECHNIQUE EXAMPLE : PRODUCT CANNIBALISM

Product cannibalization occurs when a company decides to replace an existing product and introduce a new one in its place, regardless of its position in the market (i.e. the product's life cycle phase does not come into account). This is due to newly introduced technologies and it is most common in high tech companies. As all things in life there is negative and positive cannibalization.

In the normal case of cannibalization, an improved version of a product replaces an existing product as the existing product reaches its sales peak in the market. The new product is sold at a high price to sustain the sales, as the old product approaches the end of its life cycle. Nevertheless there are times that companies have introduced a new version of a product, when the existing product is only start to grow. In this way the company sustain peak sales all the time and does not wait for the existing product to enter its maturity phase. The trick in cannibalization is to know when and why to implement it, since bad, late or early cannibalization can lead to bad results for a company sales[4].

1. UNFAVORABLE CANNIBALIZATION

Cannibalization should be approached cautiously when there are hints that it may have an unfavorable economic effect to the company, such as lower sales and profits, higher technical skills and great retooling. The causes of such economic problems are given bellow.

- The new product contributes less to profit than the old one: When the new product is sold at a lower price, with a resulting lower profit than the old one, then it does not sufficiently increase the company's market share or market size.
- The economics of the new product might not be favorable: Technology changes can force a product to be cannibalized by a completely new one. But

[4] IBM made some severe mistakes in the past by avoiding cannibalizing because it was the market leader, letting competitors succeed.

in some cases the loss of profits due to the cannibalization is too great. For example a company that produced ready business forms in paper was forced to change into electronic forms for use in personal computers. Although the resulting software was a success and yield great profits, the sales of the paper forms declined so fast that the combined profit from both products, compared to the profits if the company did not cannibalize the original product showed a great loss in profits. (See table bellow)

Table 2: Comparison of revenues - profits

"Software" Revenue	"Software" Profit	Lost "Forms" Revenue	Lost "Forms" Profit	Change in Profit
$10	$5	$15	$10	-$5

Source: McGrath M.

- The new product requires significant retooling: When a new product requires a different manufacturing process, profit is lower due to the investment in that process and due to the write-offs linked to retooling the old manufacturing process.
- The new product has greater risks: The new product may be profitable but it may have greater risks than the old one. A company cannot cannibalize its market share using a failed or failing product. This can happen in high-tech companies that do not understand enough of a new technology so that to turn it into a successful and working product. As a result a unreliable product emerges and replaces a reliable one, that can increase service costs and as a result decrease expected profits.

2. OFFENSIVE CANNIBALIZATION STRATEGIES

Cannibalization favors the attacker and always hurts the market leader. For companies that are trying to gain market share or establish themselves into a market,

cannibalization is the way to do it[5]. Also cannibalization is a good way to defend market share or size. A usual practice is the market leader to wait and do not cannibalize a product unless it has to. It is thought that a company should acquire and develop a new technology that will produce a newer and better product than an existing one and then wait. Then as competitors surface and attack market share, cannibalization of a product is ripe. Then and only then quick introduction of a new product into the market will deter competition, increase profits and keep market share. But this strategy does not always work since delays will allow the competition to grab a substantial piece of the market before the market leader can react.

3. DEFENSIVE CANNIBALIZATION STRATEGIES

Controlled cannibalization can be a good way to repel attackers as deforesting can repel fire. A market leader has many defensive cannibalization strategies that are discussed bellow.

- Cannibalize before competitors do: Cannibalization of a company's product(s) before a competitor does, is a defensive strategy to keep the competitor of being successful. Timing is the key in this strategy. Do it too soon and profits will drop, do it to late and market share is gone.
- Introduction of cannibalization as a means of keeping technology edge over competition: A good strategy is for a company, that is the market leader, to cannibalize its products as competitors start to catch up in terms of technology advancements. (For example "Intel Corporation" cannibalized its 8088 processor in favor of the 80286 after 2 ½ years, the 80286 in favor of the 386 after 3 years, the 386 in favor of the 486 after 4 years, the 486 in favor with the Pentium after another 4 ½ and so on). So the market leader dictates the pace and length of a product's life cycle. (In the case on Intel the replacement of 486 to Pentium took so long because competitors had not been able to catch up).

[5] INTEL and AMD are companies that use cannibalization as an offensive strategy tool. Amd uses it to grab a bite of Intel's market share of CPUs and Intel uses it to defend its market share as market leader. Another example is the "war" waging between Sega and Nintendo as one company after the other cannibalize its products, introducing new ones, in an effort to keep and gain market share.

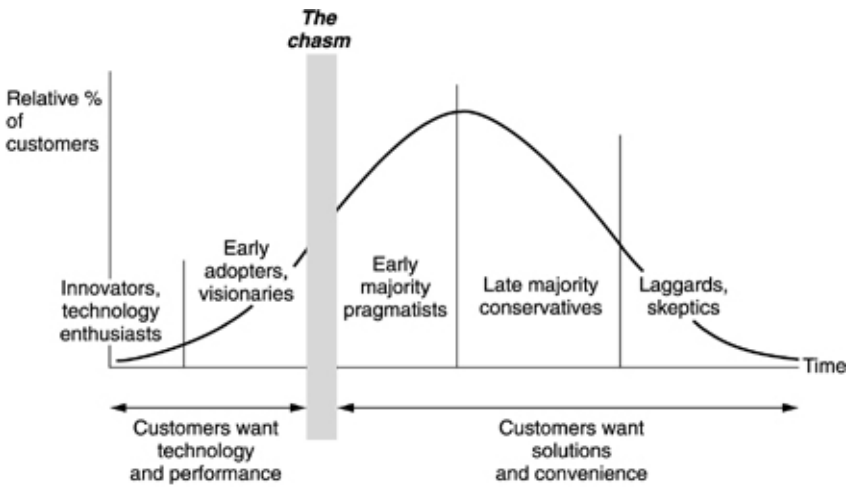
- Management of cannibalization rate through pricing: When cannibalization of a product is decided, the rate at which this will happen depends on pricing. The price of the new product should be at a level that encourages a particular mix of sales of the old and new product. If the price of the new product is lower than the price of the old then cannibalization rate slows down. If the opposite happens then the cannibalization rate is increased. Higher prices in new products can reflect their superiority over the old ones.
- Minimization of cannibalization by introducing of the new product to certain market segments: Some market segments are less vulnerable to cannibalization to others. This is because there is more or less to lose or gain for each of them. By choosing the right segment to perform the cannibalization of a product a company can gain benefits without loses and acquire experience on product behavior.

PART 4: PRODUCT LIFE CYCLE IN RESPECT TO THE TECHNOLOGY LIFE CYCLE

As a new technology matures so is the product or service that uses this technology. The change that occurs during a technology life cycle has a unique reflection on the customers and so on the product life cycle.

In the early days of a new technology, early adopters and technology enthusiasts drive a market since they demand just technology. This drive and demand is translated as the introduction phase of a new product by many companies. As technology grows old, customers become more conservative and demand quick solutions and convenience. In this case a product usually enters in the realm of its growth and as time passes its maturity.

Fig. 2: Change in customers as technology matures



Source: Norman D.

The “chasm” shown in the graph above depicts the difference between the early and late adopters. Each needs different marketing strategies and each is translated to a product’s different phase of its life cycle. One should note that the late adopters hold the greatest percentage of customers in a market. This is why most products begin their life cycle as technology driven and change into customer driven as time passes by. A good example of this is the computer market. In one hand customers ask for

ease of use, convenience, short documentation and good design. On the other hand customers rush out to purchase anything new regardless of its complexity. This is why companies[6] in the computer industry withdraw their products long before they reach their maturity phase. This is the moment that a product reaches its peak i.e. the time that both early and late adopters buy the product.

[6] Intel Corporation is one of the companies that usually withdraw products during their peak to replace them with other ones of better and newer technology.

PART 5: USE OF PRODUCT MANAGEMENT FOR SUCCESSFUL PRODUCT LIFE CYCLE

Product management is a middle level management function that can be used to manage a products life cycle and enables a company to take all the decisions needed during each phase of a product's life cycle. The moment of introduction and of withdrawal of a product is defined by the use of product management by a Product Manager.

A Product Manager exists for three basic reasons. For starters he manages the revenue, profits, forecasting, marketing and developing activities related to a product during its life cycle. Secondly, since to win a market requires deep understanding of the customer, he identifies unfulfilled customer needs and so he makes the decision for the development of certain products that match the customers and so the markets needs. Finally he provides directions to internal organization of the company since he can be the eyes and ears of the products path during its life cycle.

To improve a product success during each of its phase of its life cycle (development - introduction – growth – maturity – decline), a product manager must uphold the following three fundamentals.

- Understand how product management works: When responsible for a given new product, a product manager is required to know about the product, the market, the customers and the competitors, so that he van give directions that will lead to a successful product. He must be capable of managing the manufacturing line as well as the marketing of the product. When the product manager has no specific authority over those that are involved in a new product, he needs to gather the resources required for the organization to meet product goals. He needs to know where to look and how to get the necessary expertise for the success of the product.
- Maintain a product / market balance: The product manager as the person that will make a new product to work, needs to understand and have a strong grasp of the needs of the customer / market and therefore make the right decisions

on market introduction, product life cycle and product cannibalization. To achieve the above he must balance the needs of the customers with the company's capabilities. Also he needs to balance product goals with company objectives. The way a product's success is measured depends on where the product is in its life cycle. So the product manager must understand the strategic company direction and translate that into product strategy and product life cycle position.

- Consider product management as a discipline: Managing a product must not be taken as a part time job or function. It requires continuous monitoring and review. Having said that, it is not clear why many companies do not consider product management as a discipline. The answer lies in the fact that product management is not taught as engineering or accounting i.e. does not have formalized training.

ANNEX 1: PRODUCT LIFE CYCLE PHASES QUICK REFERENCE

INTRODUCTION PHASE	
PRICE	High, customers willing to pay premium for new product. Early adopters.
PROMOTION	Limited. Highly targeted promotional efforts aimed at specific customers
DISTRIBUTION	Direct (factory to customer) or limited distribution through specific strategic partners.
SALES	Small team of highly skilled salesmen with good knowledge of the market.
DEVELOPMENT	Focus on time to market and uniqueness.
MANUFACTURING	High expenditure for new production capacity.
SERVICE	High level of service for targeted customers.
SUPPORT	Direct factory support. Engineering involvement is required.
TRAINING	Focused on new product features, benefits, differentiation, pricing and functionality.
TECHNOLOGY	New and innovative.
COMPETITION	Limited. May be offering different solution for the same problem or application.
MARKET SHARE	Low overall.
GROWTH PHASE	
PRICE	10% of market level. – 10% if the brand name is weak and competition is severe, + 10% if sales are good and competition does not have similar product to offer.
PROMOTION	Heavy. Targeted promotions, trade shows, direct mail, sales seminars, articles and press releases.
DISTRIBUTION	Highly skilled. Focused channels with strong technical skills if needed, complementary products and services.
SALES	Everywhere possible. Retail shops, telephone, internet.
DEVELOPMENT	Complete development. Market penetration is sustained with variations and improvements of the product.
MANUFACTURING	Addition of capacity and automation.

SERVICE	Local and regional, fully staffed.
SUPPORT	Phone support.
TRAINING	Transition to newer version of product.
TECHNOLOGY	Newer and leading edge.
COMPETITION	New appearing worldwide.
MARKET SHARE	High growth. All out market warfare with competitors.
MATURITY PHASE	
PRICE	Stable.
PROMOTION	Focused on reliability, quality, predictability, new enhancements.
DISTRIBUTION	Many distributors, alternative channels, offshore sales.
SALES	Direct sales focused on hi-volume, high profit.
DEVELOPMENT	Focused on cost reductions.
MANUFACTURING	Focused on increasing yield and productivity.
SERVICE	Distributors take over the service efforts.
SUPPORT	Local channels lead support.
TRAINING	Competition differentiation.
TECHNOLOGY	Aging
COMPETITION	Well established.
MARKET SHARE	Predictable market share every year. Limited opportunities for quick gains.
DECLINE PHASE	
PRICE	High compared to the demand.
PROMOTION	Limited – no promotion or advertising efforts.
DISTRIBUTION	Use of existing channels.
SALES	Maintenance and repair orientated for high-tech products.
DEVELOPMENT	Focused on cost reduction.
MANUFACTURING	No capital expenditures, outsourcing.
SERVICE	High prices on spare parts.
SUPPORT	Phone support.
TRAINING	None
TECHNOLOGY	Old and outdated.

COMPETITION	Limited.
MARKET SHARE	Shrinking fast.

Source: Daft L.

ANNEX 2: FRAMEWORK EXAMPLE FOR CANNIBALIZATION

Many companies find it very difficult to estimate the impact of cannibalization of a new product. This is way companies frequently make the wrong decisions on when and what to cannibalize. As mentioned before, they introduce a product to early into a market or too late and subsequently they lose a great share of the market and the process of cannibalization backfires at them. The following table shows a theoretical analysis of a products revenues and the impact of cannibalization of it in favor of another product.

Course 1		**2000**	**2001**	**2002**	**2003**	**2004**
Investment		-10000	0	0	0	0
Units sold		50	400	1200	2000	2000
Selling price	($)	50	45	42	40	40
Revenue	($)	2500	18000	50400	80000	80000
Net income	(%)	15	15	15	15	15
Net income	($)	375	2700	7560	12000	12000
Net investment	($)	-9625	-6925	635	12635	24635
Course 2		**2000**	**2001**	**2002**	**2003**	**2004**
New product income	($)	375	2700	7560	12000	12000
Cannibalization						
Units sold		0	300	1000	1500	1500
Selling price	($)	40	40	40	40	40
Revenue cannibalized	($)	0	12000	40000	60000	60000
Net income	(%)	15	15	15	15	15
Income cannibalized	($)	0	1800	6000	9000	9000
Income net of cannibalization	($)	375	900	1560	3000	3000
Net investment	($)	-9625	-8725	-7165	-4165	-1165
Course 3		**2000**	**2001**	**2002**	**2003**	**2004**
Income net of cannibalization	($)	375	900	1560	3000	3000
Expected lost sales						
Units		0	0	500	1000	1000
Selling price	($)	40	40	40	40	40
Lost revenue expected	($)	0	0	20000	40000	40000
Net income	(%)	15	15	15	15	15
Lost income expected	($)	0	0	3000	6000	6000

Income net of cannibalization with adjustment for low sales	($)	375	900	4560	9000	9000
Net investment	($)	-9625	-8725	-4165	4835	13835

In the table above there are three courses to be taken. The first one is a financial analysis of a product. How units of the product are expected to be sold over the next 3 years, how many of them were sold over the period 2000 and 2001, their total revenue, their total income, and the profits compared to the initial investment.

Course 2 considers the impact of cannibalization over the same period of time. In 2001 300 of the total 400 units were sold of the original product and only 100 of the newly introduced product and so on. In the analysis net income from Course 1 is the starting point and adjustments due to cannibalization are made. The analysis shows that losses from cannibalization are never fully recovered and a loss of $1165 is left at the end of 2004.

Course 3 shows the situation if the company did nothing compared to cannibalization. Lost sales are due to competition that already has cannibalized its product and gains market share. A total of $15.000 could be lost be the end of 2004. Compared to the cannibalization alternative, there is a profit and an increase in total income which will cover the initial investment and which would expect to rise around $13.000 by the end of 2004.

So cannibalization seems a good idea but a better would be to delay it for 2 years (2000 and 2001) so as to optimize revenues and income from both existing product and new product.

Source: McGrath M.

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