CHAPTER -1
Introduction
INTRODUCTION

Milk production in the country is estimated to have increased by 6 per cent to reach approximately 140 million tonnes. Innovative process technologies coupled with effective strategies have played a major role in achieving this milestone. Currently the global milk demand is growing by 15 million tons per year. This presents for India a unique opportunity for building a sustainable dairy chain that sources milk from smallholder dairy farmers to meet not just domestic needs but also those of the global market.

However, in today's competitive global scenario, it is imperative for stakeholders to realise the importance of improving the quality and not just quantity of production.

Focus should be laid on better procurement, testing, processing and product development for diversified dairy products. Hence, the role of innovative and cost-effective technologies in all aspects of dairying cannot be undermined. Further, the technological and qualitative changes made in these areas would lead to value addition, increased profits and decreased production costs for the dairy sector.

Companies show their presence in the marketplace by way of their offerings. These offerings can be in the form of products, services, or ideas and, in many cases, a combination of all these.

Such offerings are provided with several objectives and reasons. Profitability is mostly the key objective, directly corresponding to a company's bottom line. Other objectives, such as the company's image,
company's awareness, customer satisfaction, customer care and market share, are common as well, and these are important for long-term viability and competitiveness. In the light of these objectives, it should be evident that the success of a company offering has strategic implications. However, success is not guaranteed. Special efforts are necessary to increase the likelihood of success.

Such efforts are the part of a company's process which is called product planning. Product planning is formally defined as the process "of envisioning, conceptualizing, developing, producing, testing, commercializing, sustaining, and disposing of organizational offerings to satisfy consumer needs/wants and achieve organizational objectives". This definition shows that product planning is certainly a broad and complex endeavor, comprising numerous issues and activities, many of which are cross-disciplinary in nature.

In simple words, it can be said that product planning can be characterized as comprising the two processes of product development and product management. Product development represents the "up-front" process, where the product/service is conceived, developed, produced, and tested. All these activities occur prior to the formal offering of the product/service to the marketplace, which is termed as the "launch."

Product management represents the "back-end" process, where the product/service is commercialized, sustained, and eventually
withdrawn. Product management includes the launch endeavor along with all activities that occur after the 'launch'.

Distinguishing product planning into two phases of product development and product management it is useful in understanding the endeavor, separating the two processes can lead to certain unfavourable and unfortunate results. For one thing, the separation of product development and product management implicitly assumes a break between the two processes, which overlooks the necessary transition.

Various new product offerings have failed to reach their potential because product development was not properly linked to product management, and thus, misunderstanding about the new product offering abounded. Separating the two processes also implies that product development has a stopping point, which is not really true. Even after launch, product developers should work with product managers to improve and possibly broaden the brand or product line. Obviously, product management should not be seen as just a launch and post launch activity. In fact, product managers can work with product developers on delineating market trends and customer needs that future offerings should serve. On the whole, a philosophy of product planning should acknowledge the important processes of product development and product management, as well as the

necessary link between them in order, to secure a full "inception-to-termination" view of the company offerings.\textsuperscript{3}

**PRODUCT**

In the formation of total marketing-mix, product planning and development has a unique role to play in a marketing company. Changing customer heads and new technologies make the existing products vulnerable. Entire marketing activities and operations are related with the sale of the product. After market segmentation and targeting, a company is required to develop and launch new products. Product can be termed as the most tangible expression of the offering of a marketing Endeavour. Products also represent the ways and means through which the marketing company seeks to satisfy consumer needs and wants. The ultimate destination of each product is to provide maximum customer satisfaction.

In this context, Philip Kolter rightly, remarks, "A Product is a bundle of physical, service as symbolic particulars expected to yield satisfaction or benefits to the buyer."\textsuperscript{4}

According to W.J. Stanton, "A product is a set of tangible and intangible attributes, including packaging, colour, price, manufacturer's and retailer's services, which the buyer market accepts as offering satisfaction of wants or needs."\textsuperscript{5}

A product is a bundle of utilities consisting of various product features and accompanying services.

On this base of the above definitions, it can be said that it is just as much a product and requires equal attention to systematic product planning.

Now, product can mean different things to different people based on the given context. Three particular contexts are considered: the nature of innovation, the nature of market demand, and the nature of the company's internal perspective.

**Product through the Nature of Innovation**

One way to define product is through the nature of innovation underlying the respective product. Specifically, the terms of invention, innovation, and imitation can be associated with product.

Inventions are not products. They are technical devices that contain features and are packaged into some form, and provide a function. The distinction of inventions is that these features, forms, or functions may or may not match a need, want, or desire in the marketplace.

Crawford (1987) defines inventions as 'taking pre-existing knowledge and combining it in such a way as to develop something that existed never before'.

Innovations are basically inventions around which a marketing program has been built to clearly offer a benefit to customers, a benefit that satisfies a market need, want, or desire. Innovations are considered products because customers clearly understand how they satisfy a need, want, or desire. In other words, innovations represent a total
package of features, forms, and functions concentrated on delivering the benefit to customers.

Innovations can be classified as continuous and discontinuous innovations. Continuous innovations involve slight product changes that customers can readily understand and use. Such innovations can be the result of the normal upgrading of products, and in most cases, they do not require a change in customer behavior.\(^6\)

**Product through the Nature of Market Demand**

Product also can be defined from a market perspective. This perspective is based on the premise that all products extend from a core benefit and that products can be represented as building on the core benefit. Product, therefore, can be portrayed as a group of concentric circles building on the issues of the inner circles, as shown in figure 1.1.

The essential component of any product is the core benefit. The core benefit represents the fundamental service or benefit that the consumer is really buying and is derived from the consumer's need or want. However, consumers cannot buy just a benefit.

The benefit must be put into some form or given some features through which the benefit can be delivered. Based on this framework, decisions regarding products (or services) must begin with what the core benefit is (or should be).

The second level of a product is the generic product. The generic product is the basic version of the product and is typically a "less developed" product. Less developed means that the product does not have features or forms that distinguish the given product or service.

However, the features and/or forms given to the product or service allow consumers to receive the benefit that they want.

The third level is the expected product. The expected product includes a set of attributes and conditions that buyers normally expect and agree to when they purchase this product.
The **fourth level** is the augmented product. The augmented product is one that includes additional services and benefits that distinguish the company's offering from competitors' offerings. At this level, the product is complemented by services and vice versa.

And the **fifth and top level** is the potential product. The potential product is all the augmentations and transformations that the product might undergo in the future. The potential product represents a product that attempts to satisfy all consumers' needs and wants related to the product and thereby create "customer delight."

**Product through the Company's Internal Perspective**

A third way to define product is from an internal company perspective. Specifically, product can be defined in terms of a product item, product line, product family, or product mix. A product item is the individual product that a particular customer may buy. The product item, therefore, is a specific model, brand, or size of a product that a company offers.

A product line is a group of closely related product items. Distinguishing product items by product lines is important for various reasons. Organizing products by product lines may indicate a new opportunity. Product lines can help to spread resources across products, using company resources in a more optimal fashion. Product lines also can serve as a signal to the consumer about quality and/or desirable characteristics, and thus, product lines can serve as a mechanism for gaining market acceptance as well as promoting product items.\(^7\)

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A product family is a collection of product lines in a related group. Sometimes, a product family is referred to as a product category or even a product platform. Determining product families can allow for better use of manufacturing capabilities or other company resources. Companies also sometimes organize their organizational structures in accordance with product families.

At the highest level of aggregation is the product mix. Product mix consists of all the different product lines a firm offers. Three characteristics are used to describe the product mix: width, depth, and consistency. Width represents the number of different product lines. A wide product mix suggests many product lines, whereas a narrow product mix suggests fewer product lines. Depth represents the number of product items within each line. A deep product mix suggests many product items per product line; a shallow product line suggests fewer product items per line. And consistency is the degree of commonality among lines with respect to end use, distribution outlets, consumer groups, and/or price range. A consistent product mix would suggest similar product lines; an inconsistent product mix would suggest a diverse mix of product lines.

DEFINING A NEW PRODUCT

Having defined what product means, it is pertinent to distinguish what is meant by new product. Like the term 'product', new product can mean different things. Conceivably, there are six types of new products: cost improvements, product improvements, line extensions,
market extensions, new category entries, and new-to-the-world products.

Cost improvements are not dramatic changes to the product and may not be noticeable by the consumer. However, cost improvements may provide a competitive advantage.

PRODUCT PLANNING

Karl H. Tiet Jen observes: "Product planning may be defined as" the act of marking out and supervising the search, screening, development, and commercialization of new products, the modification of existing lines, and the discontinuance of marginal or unprofitable items." ⁸

In the words of W.J. Stanton it can be said, "Product planning embraces all activities which enable producers and middlemen to determine what should constitute a company's line of products." ⁹

Thus, product planning is a systematic decision-making relating to all aspects of the development and management of a firm's products, including branding, packaging, labeling, and product mix decisions.

PRODUCT DEVELOPMENT

Product development includes a number of decisions, normally, what to manufacture or by whom to have its packaging, how to fix its price and how to sell it. In case of a manufacturing organization, the production department will develop and produce products on the

advice of the marketing department because it is the marketing
department which knows better the requirements of the customers. In
case of a purely trading organization, the purchasing department will
procure those products which are suggested by the marketing
department. The work of product planning and development will be
performed by the marketing department itself.\(^\text{10}\)

New product development consists of the creation of new ideas,
their evaluation in terms of sales potentials and profitability,
production facilities, resources available, designing and production
testing and marketing of the product. The main task of the product
planners is to identify specific customer needs and expectations and
align company's capabilities with the changing market demands.

In the words of Lipson and Darling, it can be said, "Product
development involves the adding, dropping, and modification of item
specifications in the product line for a given period of time, usually one
year."\(^\text{11}\)

Whatever may be nature of operation of a company, product
planning and development are necessary for its survival and growth in
the long run; every product has a life-cycle and it becomes obsolete
after the completion of its life-cycle. Therefore, it is essential to
develop new products and alter or improve the existing ones to meet
the requirements of customers.

\(^{10}\) Shajahan, **New Product Strategy and Management** (Delhi : Himalaya Publishing House
Edition 2001), p. 4

\(^{11}\) Lipson *et al.*, **Marketing Fundamentals** (New York : John Wiley and Sons, 1974), p. 145
Product planning's relates to the addition of new products to the existing product line. Addition of new products involves generation of new product ideas, appraisal of various possibilities, economic analysis, product development, product testing, test marketing and developing markets.

Another important problem of product planning is modification or elimination of existing products. The need for continuous modification of the product is great because society's needs are always changing, and improved, product must be introduced to fulfil them. All products have certain deficiencies as they are the result of a great many compromises. The perfect product has yet to be made.\(^{12}\)

Research makes possible the reduction and redressal of these deficiencies and brings about improved products.

**PRODUCT PLANNING ROLE**

Product planning serves various key roles in the company. One of these roles is resource allocation. Product planning analyzes each product/service, whether current or new, to determine the resources that it will need to be successful and prioritize the impact that it has for the company. The company's finite resources are then apportioned to those products deserving of investment and support. Assuming most, if not all, products are deserving of resources, product planning forces the company to optimize the division of its resources across products.

Related to the role of resource allocation is that of product mix coordination. Here, the objective is to balance the various products that the company offers to ensure that a particular type of product is not overwhelming the company's offerings or diluting customer interest. The role of product mix coordination is to provide a product mix that comprises distinguished products where some or all are complementary products and that provide the strongest market presence possible.

Another role is the marketing program support. Product planning can provide market information based on the current performance of existing products. Product planning also can inform the marketing function about customer comments regarding current products and customer needs. As a result, new marketing programs can be better focused to meet the intended target market(s), and current marketing programs can be refined.

The fourth role is the appraisal of the company's offerings. Product planning evaluates the performance of current products (and services) to reveal their impact on the business. In many instances, this impact is measured in terms of cash flow. Products are found to be either generating a profit or losing money for the company. In the former case, product planners consider how to increase the profit being generated; in the latter, product planners consider actions needed to turn the product around.

Of course, one action that could be taken is the termination of the product. This is another role of product planning, that is, product deletion.
Product planners identify products that should be deleted and chart a course of action for proper termination of the product. This course might include programs to transition customers to alternative products, and possibly, a plan to maintain a spare parts inventory for the product being deleted so as not to alienate customers of the product.

**Product Innovation and New Product Development**

Product innovation is the overarching management framework for making incremental changes and improvements to products, services, and processes. It includes the conceptualization, design, development, validation, and commercialization of new products for customers and markets in concern with the prevailing conditions and trends. Product innovation involves the creative responses and solutions for meeting the needs and expectations of customers and market(s), the driving forces in the business environment, and the strategic requirements of the organization. Product innovation runs the gamut from improving existing products to discovering entirely new ways of satisfying customers and stakeholders. From an internal perspective, product innovation depends on the knowledge, experience, capabilities, resources, and the prevailing technologies of the organization. From an external perspective, product innovation focuses on customer and stakeholder needs, wants, and expectations. Customers desire excellent products and services with exceptional value, outstanding benefits, high quality, and assured reliability.
Meeting such specifications is the exciting challenge of product innovation.\(^3\)

Product innovation is challenging because of the complexities of the business environment, the changing needs of customers and markets, the effects of competition, and the difficulties associated with understanding the present and forecasting the future. However, the complexities of product innovation are simplified in most organizations because there are common pathways to define and describe the processes and methods used for developing new products, and the organization has an information system to support the required analysis and decision making. Product innovation requires contributions from strategic management, engineering, marketing, finance, production and operations, supply networks, distribution channels, and customers on a concurrent basis to ensure that the process encompasses the essential requirements for achieving successful outcomes. A diversity of knowledge, skills, creativity, and insights is an essential precursor for success.

**Integrated Product Development (IPD)**

Integrated Product Development (IPD) is the most widely adapted product innovation methodology used to link systematically the external business environment and its opportunities, challenges, and concerns - with the internal dimensions of the organization – and its capabilities and resources - to create innovative solutions based on

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improved products and services. IPD is the concurrent development of new products using cross-functional teams that are strategically and tactically aligned so that every participant is involved in the process from inception to commercialization. IPD is the New Product Development (NPD) construct (process) used by most leading corporations to manage their NPD programs. There are many case studies and much empirical data to suggest that IPD is the most effective product-innovation methodology IPD employs process-management techniques that integrate capabilities and requirements into seamless flows of activities for ensuring creativity, quality, thoroughness, and speed. Successful outcomes (new products) are realized through an effective NPD process that facilitates the flow of activities and outcomes from inception to commercialization using the knowledge gained from previous NPD programs and the skills and capabilities of the participants.

IPD depends on the entire enterprise to achieve success. The enterprise consists of all the internal participants, and the suppliers, the distribution channel, the customers, the stakeholders, related industries, and strategic partner.\textsuperscript{14}

**Objectives of Product Innovation.**

The primary objectives of product innovation are to create value, to obtain a competitive advantage, and to achieve long-term success through the development and commercialization of new products and

services. The principal drivers of product innovation are customers, markets, stakeholders, and the other constituents in the business environment. The focus is on meeting their needs and expectations as they evolve.

Product innovation is a subset of the strategic-management system. Strategic management provides the direction, strategies, objectives, and the overarching decision-making process to determine what options should be addressed and how to create an atmosphere within the organization for discovering opportunities and responding to the challenges. Product innovation provides new solutions to old problems; creates new opportunities to exploit existing capabilities, resources, and assets; ensures sustainable outcomes through the systematic replacement of obsolete products; and builds new capabilities and resources for sustaining the future.\(^{15}\)

The business environment includes the social, economic, political, regulatory, ecological, market, and technological forces that impinge on the organization causing changes and providing opportunities and challenges. Social and economic forces have significant effects on stakeholders and other constituents of the organization. Political and regulatory factors establish mandates that drive the need for new products and specify requirements that must be included in the NPD process to ensure that all legal requirements are fulfilled. Ecological factors are critical for satisfying the basic underpinnings of the natural world and for maintaining a sustainable

\(^{15}\) Koen et al. (2007), "Providing Clarity and a Common Language to the ‘Fuzzy Front End’. Research Technology Management, 44 (2), P.46-55
position in the future. Market forces generally influence the viability of existing products in the market place. Changing market conditions and trends establish new provisions that may not be satisfied by existing products. Such changes have effects on the life cycle of current product offerings, creating opportunities for new products. Technological forces provide new ways and means of dealing with customer and stakeholder needs and providing the mechanisms to create the products that customers demand, expect, or would like if they were available. All of these forces provide opportunities to create new solutions for satisfying the needs of the business environment, thus fueling product innovation and the NPD process.  

Technological innovation includes technology development and R&D activities.

These involve creating new technologies, developing the next generation (technology platform) of existing technologies, improving existing technologies and new-to-the-world products and processes thereof, discovering new technologies to improve existing products, and finding new opportunities to exploit the technical capabilities and resources of the organization. Most of these topics are beyond the scope of these discussions since they are related to technological innovation.

Product management involves the technical and marketing functions for delivering products and services to existing customers...

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and markets using the organization's product delivery system. Product management provides information and data to support requests for new products. Depending on the organizational structure, it may have a direct role in leading and/or managing product innovation and new-product development.

In most organizations, current products and services constitute the primary function and modalities of the product delivery system. The product delivery system consists of the resources and capabilities to produce, market, and deliver the product lines and the related support services for satisfying customers and generating cash flow. The product delivery system includes all of the elements of the value chain necessary to produce and deliver products to customers successfully. The product delivery system is critical to the ongoing success of any organization. It is the flow of product and services to customers that provides the cash flow for sustaining the life-blood of the organization. However, most products and services have a limited life cycle or attractiveness in the served markets. Products and services have to be refreshed, reinvigorated, or replaced on a periodic basis to avoid deterioration of market positions or obsolescence.

Product innovation examines the need for innovative products and processes, and the requisite NPD programs. It determines the role that new-product development plays in providing the mechanisms to create change.
The NPD Process

The NPD process is a horizontal construct that links activities and actions for converting inputs into outputs in a systematic way. The NPD process incorporates phases and reviews that ensure a comprehensive progression of accomplishments for creating a new product(s) based on the strategic direction and the operating capabilities and requirements. The NPD process follows a logical flow from the strategic phase, through the development phases, to the product launch.

The NPD process is a prescribed pathway that practitioners use to formulate and implement an NPD program. The NPD process includes phases, steps, activities, and reviews. The phases are the major areas that include the description, analysis, and development of the action items and are typically followed by a management review and/or approval prior to moving to the next phase. Generally, the phases include the following:

Phases and reviews of the Generic NPD Process

- Phase 0. Strategic Logic and Alignment
- Phase 1. Idea Generation
- Phase 2. Concept Development and Selection
- Phase 3. Program Definition
- Phase 4. Design and Development
- Phase 5. Validation
- Phase 6. Pre-commercialization and Launch
The phases and reviews provide a standardized format for executing the NPD program within the management system. They give management the ability to review and evaluate outcomes without interfering with the normal flow of activities and accomplishments or constraining the creativity of the practitioners. Reviews are flexible activities that may be simple discussions or involved presentations and debates. They are dependent on management style and the criticality of the elements under discussion and awaiting approval.

The phases allow the participants to carry out the specific requirements of the program with flexibility. The activities within the phases are generally accomplished using parallel streams, providing the means to minimize the time and effort spent on individual activities. The overarching goals are to develop the new products successfully and to satisfy the needs of the business environment.

![Fig. 1.2 : The Standardized NPD Process](source)

Source :– David Rainey, "Product Innovation Leading Change through Integrated Product Development."

For an NPD program, the basic approach is to identify the required phases, steps, activities, and reviews, and to map out a pathway (in series and in parallel) that builds value, minimizes time,
and ensures thoroughness. A key to success is to implement as many of the activities as possible on a parallel basis.

The NPD process provides the mechanisms (through phases and reviews) to simplify the flow of the activities into less-complicated, easily understandable steps so that everyone knows what to do. Given that NPD programs tend to be related and have similar requirements, the execution of the NPD process provides answers to the following:

- Why is the new product being developed?
- What is required to develop it?
- When does the new product have to be available in the market?
- Who is responsible for the NPD program and the activities?
- What are the outcomes required to meet expectations and how are they measured?

The NPD process provides structure for ensuring that activities are linked with the upstream and downstream requirements and participants. Decisions are made on the basis of what has to be done and when it has to be accomplished. The NPD process depends on the organizational capabilities and resource management. People perform tasks and get results and they need to have the capabilities and resources to achieve those results.
Principles of IPD

IPD relies on the articulation of guiding principles to all of the participants so that they may understand the underlying drivers and philosophies. The fundamental principles offer both guidance and direction. The IPD principles are as follows:

- **Have a holistic approach.** New-product development is an interdisciplinary process that obtains concurrent contributions from all of the participants and necessitates that as many activities as possible be performed on a parallel basis. (It is not just the responsibility of engineering or marketing.) All of the activities must be integrated into an NPD process that is logical and systematic. Parallel processing is essential for holistic development.

- **Ensure strategic alignment of the NPD process.** Strategic alignment infers that the NPD process must be part of the overall business strategy of the organization and linked to the strategic-management system. It requires ongoing management involvement and the simultaneous commitment of the resources deployed by the organization and its supporting entities. The entire enterprise must know where it is heading and each part of the organization must be headed in the same direction. The organization must have clear objectives and targets that are well understood and form the basis for decision making. A hierarchy of well defined and communicated objectives provides the integration necessary to guide the NPD program.
• **Use cross-functional teams.** Cross-functional teams provide a flexible organizational structure for managing the NPD process; controlling the resources, contributions, and outcomes; and balancing the perspectives throughout the development cycle. The team approach provides the mechanisms for integrating the participants and activities over time. Because all individuals are participating on a concurrent basis, the information and knowledge necessary for making informed decisions are inherently available to participants because they experience the entire process.

• **Focus on customer and stakeholder satisfaction.** Customers and stakeholders are important participants in developing a new-product. Their needs, wants, mandates, and expectations are critical specifications. Understanding customer requirements is a fundamental challenge. Customers have expressed their latent needs and wants. Several mechanisms should be used to obtain and verify their desires.

• **Use resources efficiently and effectively.** Given that new-product development can be an open-ended process with numerous options, resources should be concentratec on specific targets where critical mass can be achieved. Critical mass suggests that resources are decisively committed in sufficient quantities to achieve success in specific market segments. Since resources are always limited, organizations must focus their attention on the primary aims and targets of the NPD program.
Priority must be given to the attainment of the essential objectives.

- **Understand and manage the timing of the NPD program.** Success is often more dependent on the correct timing of the NPD program than on the fine-tuning of the details. Timing means seizing the initiative by choosing the appropriate time and place to commercialize the new-product.

- **Prepare and communicate simple yet comprehensive plans and instructions.** Strategies, policies, plans, and objectives should be as simple as possible. The organization must understand the purpose of them and the reasoning behind them. Management should articulate the reasons as well as the directives. The logic of why an activity is necessary provides compelling reasons for the actions. Communications are often cited as the reason for failure; therefore, efforts to reduce confusion must be utilized. Effective communications can be the source for achieving success. Coordination and cooperation are primary internal mechanisms.

- **Maintain flexibility.** The rapidity of changes in the market place or in the business environment requires a flexible approach. Maintaining flexibility enhances the organization's ability to respond to changing conditions and trends. Flexibility means committing resources as required, but shaping the outcomes in such a way that there is the ability to meet changing requirements.
• **Focus on key performance areas.** In today's business environment, there are many key drivers beyond purely financial rewards. Product performance, quality, value, speed, and responsiveness are critical for success. Managing development time and investment are also critical. Successful organizations achieve outstanding results in all areas.

• **Measure performance continuously and continuously improve.** Performance evaluation is the process of assessing, analyzing, measuring, and reporting performance against the objectives and targets. An effective performance evaluation system provides the means to track realities with expectations. The process includes testing outcomes with respect to customer and stakeholder expectations in order to determine the appropriateness of the progress. Performance evaluation provides a mechanism for understanding what changes might be necessary, thus providing opportunities to make such changes in a timely manner.

The principles of IPD are interrelated and offer insights into the organizational aspects and the NPD process, not just the product. A high level of management sophistication is necessary to contend with the complexities of the global business environment.

The overall objectives of IPD are to design and build new products; to improve the process for product development; and to build a creative, capable, and innovative organization. People succeed in an
NPD situation when they know the process and understand the expectations.

![A simplified perspective of product deliver and IPD](image)

**Fig. 1.3 : A simplified perspective of product deliver and IPD**

**Source:** David Rainey, "Product Innovation Leading Change through Integrated Product Development."

**Product Life-Cycle Strategies**

After launching the new product, management wants the product to enjoy a long and happy life. Although it does not expect the product to sell forever, the company wants to earn a decent profit to cover all the effort and risk that went into launching it. Management is aware that each product will have a life cycle, although its exact shape and length are not known in advance.

Figure 1.4 shows a typical Product Life Cycle (PLC), the course that a product's sales and profits take over its lifetime. The PLC has five distinct stages:

1. Product development begins when the company finds and develops a new-product idea.
2. During product development, sales are zero and the company's investment costs mount.

3. Introduction is a period of slow sales growth as the product is introduced in the market.

4. Profits are nonexistent in this stage because of the heavy expenses of product introduction.

5. Growth is a period of rapid market acceptance and increasing profits.

6. Maturity is a period of slowdown in sales growth because the product has achieved acceptance by most potential buyers. Profit levels are off or declined because of increased marketing outlays to defend the product against competition.

7. Decline is the period when sales fall off and profits drop sown.

Fig. 1.4: Product Life Cycle (PLC) Sales and profits over the product's life from inception to demise.

Source: Philip Kotler Gray Armstrong, Principles of Marketing.
PRODUCT LIFE CYCLE STAGES

Introduction Stage

The introduction stage starts when the new product is first launched. Introduction takes time and sales growth is apt to be slow. Well-known products such as instant coffee and frozen orange juice lingered for many years before they entered a stage of rapid growth.

In this stage, as compared with other stages, profits are negative or low because of the low sales and high distribution and promotion expenses. Much money is needed to attract distributors and build their inventories. Promotion spending is relatively high to inform consumers of the new product and get them try it. Because the market is not generally ready for product refinements at this stage, the company and its few competitors produce basic versions of the product. These firms focus their selling on those buyers who are the most ready to buy.

A company, especially the market pioneer, must choose a launch strategy that is consistent with the intended product positioning. It should realize that the initial strategy is just the first step in a grander marketing plan for the product's entire life cycle. If the pioneer chooses its launch strategy to make a "killing," it may be sacrificing long-run revenue for the sake of short-run gain. As the pioneer moves through later stages of the life cycle, it will have to continuously formulate new pricing, promotion, and other marketing strategies. It has the best chance of building and retaining market leadership if it plays its cards correctly from the start.
Growth Stage

If the new product satisfies the market, it will enter a growth stage, in which sales will start climbing quickly. The early adopters will continue to buy, and later buyers will start following their lead, especially if they hear a favorable word of mouth. Attracted by the opportunities for profit, new competitors will enter the market. They will introduce new product features, and the market will expand. The increase in competitors leads to an increase in the number of distribution outlets, and sales jump just to build reseller inventories. Prices remain where they are or fall only slightly. Companies keep their promotion spending at the same or a slightly higher level. Educating the market remains a goal, but now the company must also meet the competition.

Profits increase during the growth stage, as promotion costs are spread over a large volume and as unit manufacturing costs fall. The firm uses several strategies to sustain rapid market growth as long as possible. It improves product quality and adds new product features and models. It enters new market segments and new distribution channels. It shifts some advertising from building product awareness to building product conviction and purchase, and it lowers prices at the right time to attract more buyers.

In the growth stage, the firm faces a trade-off between high market share and high current profit. By spending a lot of money on product improvement, promotion, and distribution, the company can
capture a dominant position. In doing so, however, it gives up maximum current profit, which it hopes to make up in the next stage.

**Maturity Stage**

At some point, a product's sales growth will slow down, and the product will enter a maturity stage. This maturity stage normally lasts longer than the previous stages, and it poses strong challenges to marketing management. Most products are in the maturity stage of the life cycle, and therefore most of marketing management deals with the mature product.

The slowdown in sales growth results in many producers with many products to sell. In turn, this overcapacity leads to greater competition. Competitors begin marketing down prices increasing their advertising and sales promotions, and upping their R&D budgets to find better versions of the product. These steps lead to a drop in profit. Some of the weaker competitors start dropping out, and the industry eventually contains only well-established competitors.

**Decline Stage**

The sales of most product forms and brands eventually dip. The decline may be slow, as in the case of oatmeal cereal, or rapid as in the case of phonograph records. Sales may plunge to zero, or they may drop to a low level where they continue for many years. This is the decline stage.
Sales decline for many reasons, including technological advances shifts in consumer tastes, and increased competition. As sales and profits decline, some firms withdraw from the market. Those remaining may prune their product offerings. They may drop smaller market segments and marginal trade channels, or they may cut the promotion budget and reduce their prices further.

Carrying a weak product can be very costly to a firm, and not just in profit terms. There are many hidden costs. A weak product may take up too much of management's time. It often requires frequent price and inventory adjustments. It requires advertising and sales force attention that might be better used to make "healthy" products more profitable. A product's ailing reputation can cause customer concerns about the company and its other products. The biggest cost may well lie in the future. Keeping weak products delays the search for replacements, creates a lopsided product mix, hurts current profits, and weakens the company's foothold on the future.

For these reasons, companies need to pay more attention to their aging products. The first task is to identify those products in the decline stage by regularly reviewing sales, market shares, costs, and profit trends. Then, management must decide whether to maintain, harvest, or drop each of these declining products.

Management may decide to maintain its brand without change in the hope that competitors will leave the industry.\(^\text{17}\)

With reference to the Jaipur Dairy product, market has shown the maturity stage in India. The double toned milk was introduced by Jaipur Dairy during the year 1994-1995, but it was withdrawn from the market within a year.

Toned milk and standard milk, ghee, table, butter, white butter, paneer, lassi, chhach are in growth stage and Saras Gold, Tetra Pack, and Saras Smart, Saras Shakti and Saras Kheer are in introductory stage.

Thus, keeping all these things in mind, related to the impact of the Product Planning and Development in Dairy Industry with special reference to the Jaipur Dairy Products, it grew out of the conviction that, except, a few articles here or there, no complete, clear and comprehensive research study has been made on the Jaipur Dairy products. A humble attempt has been made to make an evaluative and analytical study of the various products of the Jaipur Dairy in all its implications and aspects. The management, quality control and various milk collection processes have also been aptly and adequately dealt with.