Product Development and Product Life Cycle

Learning Outcomes

By the end of this unit the learner will be able to:

- ✓ Explain the meaning and importance of product innovation
- ✓ Describe the new product development process
- ✓ Explain the concept and stages of product life cycle

Product Development and Product Life Cycle

For the endurance and growth of any company, it is vital that they offer an innovative product line-up. However, new products do not just appear out of nowhere. They need to be engineered and the firm has to design it. This unit will cover the methodology involved in the development of a new product, the idea of the product's life cycle, the stages in its life cycle and the marketing tactics that have to be employed at each stage.

Value of Product Innovation

To innovate means to launch new things, to initiate uniqueness or make alterations. Applying this definition to a product means that the innovated item may be created as a totally new product or take an available product and offer with modifications and alterations. A new product is defined as an item that gives rise to a brand new market, taking the place of a product already available, or radically enhancing the market of the already available product. It is obvious why a firm would require an entirely new or renovate an existing product. No organisation can depend on the same product line up endlessly. Competitors are always on the lookout to snatch a share of other firms' market. This is why generating new products is thought to be a vital part of any business. Usually establishments continuously introduce new items, each assuring new and extra benefits for customers. In fact, the existence of a company can be justified by its talent to keep customers happy. Hence, a business has the obligation to provide the needed satisfaction to its consumers through its products, innovation, and services.

Nature has bequeathed us with an abundance of resources, yet they aren't limitless. Unless used with care, we will exhaust them and leave future generations in the dark. Crude oil is one example. Unless we tread with caution when it comes to its use, it will not be too long in the future when we will exhaust crude oil supply. Imagine the chaos without crude oil; no petrol for vehicles, no energy for industry to run on, natural gas all gone and furnace oil all finished. The endless list is horrifying.

It is essential that new products are carefully designed so natural resources are utilised in an optimal way. Such gifts of nature can't be wasted. Without proper planning, products may fail upon introduction, and all efforts go to waste. Despite this, many products do meet this fate, so caution is the key word here. It is essential to determine the requirements of the potential customers and then to utilize the appropriate technology to fulfil the assessed need by corresponding it with a fitting service of the product. The ability of a company to continue to exist is totally dependent on its profitability. This is achieved by introducing new products and then supporting them with an appropriate marketing agenda. It has to be understood however that adding a new product line requires major finances. Without appropriate research and monitoring, the new addition may not produce the expected results. Failing of products can lead to financial losses to the company.

Consumers now are becoming choosier when it comes to selecting a product. With increasing competition, an organisation has no choice but to search for the latest thoughts to be able to come up with newest products to fit the situation. In conclusion, we can quote Peter Drucker, a renowned management thinker. He stated that “any business enterprise has only these two basic functions: marketing and innovation."

New Product Development

By now, you will have realised that it is imperative to employ a policy for developing new products. Since a lot of products end up failing, for an organisation to continue expanding sales, new products must be produced. The idea of a product has to be tested before the company goes into designing it and it is important to have proper plan for creating the new products and putting them in the market. Developing new products requires marking and overseeing the search, vetting, developing, and finally, commercialising. So, it is necessary to take decisions relating to the kind of product idea to be taken up, the process of development, and finally, putting it in customer’s hands to fulfil his demand. This marketing philosophy requires the implementation of logical, well – developed, and exclusively satisfying products. This will allow the firm to confront competition from a strong position.

Creating a new product begins with the conception of an idea about a product, its eventual vetting for economic and mechanical viability, exploration of market viability and consumer reception, matching with firm’s facilities, and the eventual availability to the biggest segment of the market. This approach to developing a new product is defined as customer-oriented approach to product planning. From the previous discussion, it will be realized that introducing a new product is a very complex and difficult job that requires long-term effort. It comes with high costs. Even after development is completed, the marketing costs are very high and there is no assurance that it will be successful. A firm must proceed in a systemic way from one stage to the next. This advance is made up of seven steps shown in Figure 7.1

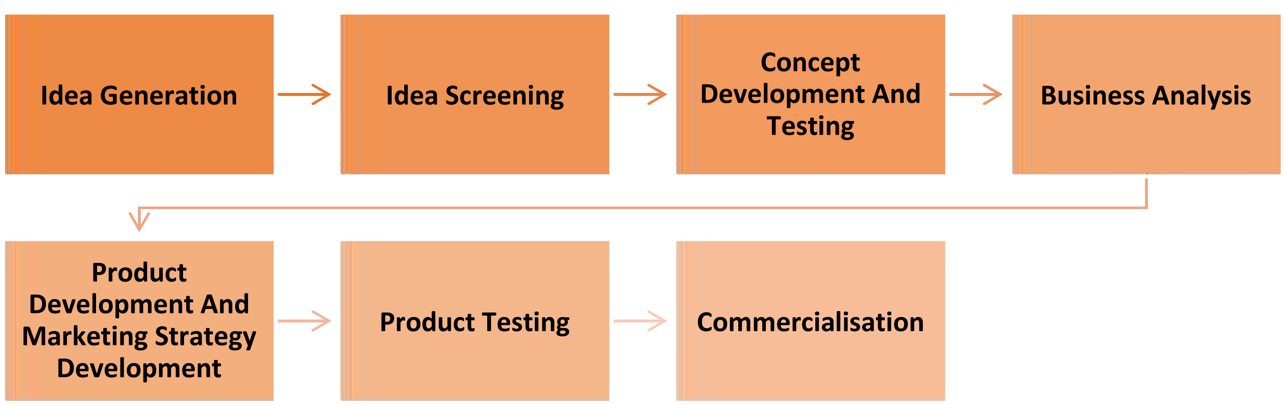


Fig. 1.1

Generating an Idea

The approach to a new product begins with formulating the idea of a product. This means having to match an apparent need with the identification of technical prospect. The said requirement can be old or a new one. An idea for a new product can come from any of the following sources:

1. **Customer:** Since marketing aims to fulfill the needs of a consumer, a watchful marketer can get new product ideas from customers by being attentive and more importantly by keeping an open mind to recognize the needs which have as yet no been expressed. Take, for instance, the example of refrigerators; someone came up with the plan to have refrigerators with two doors while another person envisioned the idea of a ball - point pen which eliminated the need to having to refill fountain pens. New ideas are born out of the needs of customers which require solutions. A customer can give a suggestion or point out a need that as yet has not been filled.
2. **Competition:** A new product can be launched by a competitor or the development of a new product can be picked up market intelligence. Using the information as a clue, the firm itself can formulate an idea and start its own experiments with it.
3. **Company Sources:** At times, ideas can be suggested by the company's own salespeople or its distribution channels. These ideas warrant further investigation as these company sources are in direct contact with the market and in a position to detect an unfulfilled need. Likewise, a new technical breakthrough can be proclaimed by the firm's own development and research section. New ideas can be put forth by company managers who keep on thinking of new and better ideas. Brain-storming sessions are also practiced in some companies to generate new ideas. These are carried out by people at different levels of the organization, which maintains a flow of ideas. Many people claim that executives of firms are gathered together and asked about new ideas or products. They name things without any thought to evaluation. No criticism is involved. The answers are recorded so the chain is uninterrupted. Finally, the generated answers are appraised.

Idea Vetting

Once the gathering of ideas is completed, the next stage is to vet them for their value. At this stage the product ideas collected undergo a critical evaluation. Poor ideas are discarded without wasting unnecessary costs of processing them further. This type of appraisal allows the firm to see which ideas are suitable for further researching and which should be abandoned. The ideas not conforming to the company agenda or limitations are dropped. Every idea has to be compatible with the firm's objectives and its marketing requirements, as well as its limitations.

A technically solid idea may not be suitable for a company, due to the large capital it requires, and the firm can't afford. Likewise, a company known for manufacture of economical merchandise may not be able to easily market a costly product due to its image of producer of cheap products. So, instead of pursuing all of the ideas which are produced, it is best to pursue only those ideas which fit the company and market anticipation. Companies can never take up all ideas generated at the same time. Therefore, the main idea of vetting is to filter the ideas and choose only the ones with most potential. To achieve this, the firm has to analyse things like market potential, probable sales quantity, profits, availability of raw materials required, production facilities, distribution channels and sales force, and finances the company can direct to the project, etc.

Concept Development and Testing

Once an idea passes screening, it is expanded into a firm business proposal. From just a term, it now develops into a total picture of company proposal. In clear terminology, it has specifications about target consumers, the exact need that has to be fulfilled, and the way in which it will be fulfilled, the benefit it will bring the consumer and the price of this need-satisfaction for the customer.

Now, the idea needs to be presented to the target customer, as far as feasible and their feedback gathered for further assessment. The idea developed in this way has to be assessed in a wider point of view which includes sales and profit capacity of the completed product line, while maximizing the marketing and manufacturing

Amenities. For instance, discuss about other modes of transport such as “battery driven cars” compared to those that run on gasoline. To be publically introduced, the product has to be tested in the surroundings in which it is to be eventually sold.

Business Analysis

The continuing process of product development requires a very detailed appraisal at the Business Analysis stage. The task is made up of projecting the impending demand, expenses, sales, investments, and return. Therefore, the total synopsis of the planned product is worked out. It may be said that such calculations cannot be worked out accurately: to make up for this, the firm estimates the finances of the project using a wide ranging set of assumptions for vital components like sales, profits and costs. These types of sensitivity analysis aid the firm to project the tolerable range of product performance and reaching those targets.

Product Development and Marketing Strategy Development

Until to this point, the idea has been exhaustively vetted and analysed. It is time to transform the concept into a product. At this stage, the abstract concept is given a solid shape, with all the required traits that were previously assumed. The effort is put into creating a prototype of the anticipated product. This will allow the determination if the concept has the required technical capacity and if the firm can generate the required technology. This stage will entail a close synchronisation of the Engineering and Marketing Departments. Engineers need to produce thesuitable drawings, designs, and construct the prototype in accordance with the prearranged specifications. The whole job is to create a product prototype that is as close as possible to the consumer product expectations and specifications.

In addition to the progression of product development, the tentative marketing approach has to be developed by the marketing department of the firm. A proposal regarding the pricing policy, promotion, and supply strategy of the product has to be made. The whole package of identifying sales force required, advertising schedule, and the tools of sales promotion regarding the new product have to be worked out. While all this is being determined, all of the firm's available resources and abilities in this regard are considered alongside. If the firm gives the go ahead signal to the concept of the new product, then, the following jobs have to be initiated:

- Set-up development project;
- If changes are found to be necessary, construct the prototype with altered specifications;
- Carry out the total laboratory evaluation; and
- Upon completion of the exploratory marketing strategy, it is time torelease the prototype for a test run

Market Testing

Once the idea of the product has taken the shape of a prototypeand a provisional marketing programme had been designed, the firm can step into commercial manufacture and circulation in the market. However, an experienced marketer will not render open to an unnecessary threat and will work towards an affirmative market response. To achieve this, he will proceed with a 'test marketing' of the anticipated product. This type of product testing allows for additional customer feedback so that any required changes in the prototype can be made along with the proposed marketing strategy, if it is required. So, test marketing is described as a research method in which the product being studied is put on sale at a select group of areas and the product acceptance by the customer is monitored, recorded, andanalysed.

The purpose is to test the planned marketing course in a representative segment of the market in the same marketing surroundings in which the planned product will eventually be sold. By running a marketing test, the marketer can gain comfort from the facts collected about sales volume and profit levels of the product. He additionally ascertains what the initial consumer reaction to the product is, but it also initiates competitive reaction to the new product. With all this information, the marketing manager can fine - tune the marketing strategy crafted in the early stages.

The following facts are collected during a marketing test:

1. Prospective volume of sales that may be generated;
2. Ascertain buyers with pioneering mind set;
3. Draw a comparison between behavior of target buyers and actual buyers;
4. Reception of the product's strong points by buyers;
5. Evaluate the advertising massage's impact;
6. Evaluate the distribution capability to make the product accessible in the chosen target areas;
7. Uncover the potential of repeat demands.

Commercialisation

Using the information collected in test marketing, the product is accordingly modified and improvements made, and approach regarding distribution, pricing, and promotion are refined. Finally, the product is ready for general market release. Commercial production of the product begins and it becomes available in the market for sale. Depending on the marketing plan, the firm may choose to introduce the product in the whole market at the same time; or it can be introduced in segments in various areas. This is decided based on the level of production to assure that it does not end up being short in the market soon after being introduced.

Reasons for Product Failure

Despite careful planning and vetting at numerous stages of product development, not all now products are destined for success. So the question becomes why is there product failures? There are six main reasons for products failing, according to Caniff and Still.

These are:

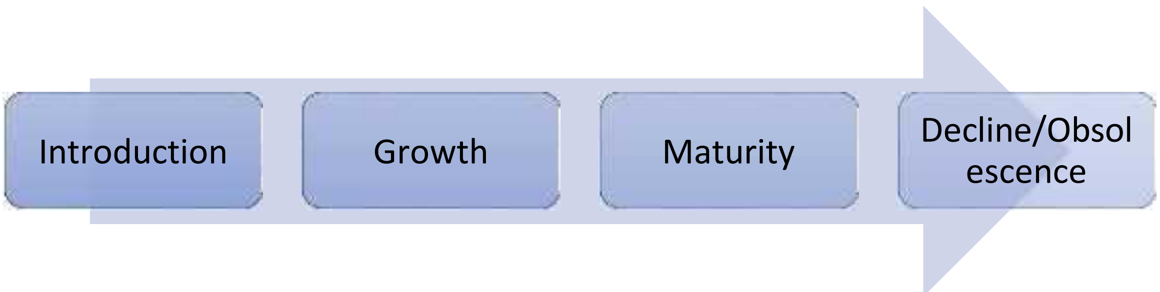
1. **Product Issues**: Product failures can be the result of problems with the newly produced product itself, ignorance of market requirements or preferences, functional defects in the product, inferior technical design or appearance, awkward sizing and poor packaging, unreliable performance, and too great of a difference in the quality, etc.
2. **Channeling and Distribution Troubles:** Products also fail when there are distribution issues like badly chosen outlets or channels, no cooperation from middlemen, and bad physical distribution system, etc.
3. **Promotional Set Backs:** Problems that lead to product failure due to poor promotions include improper or ineffective promotion campaign, advertising aimed at the incorrect market, wrong appeals, poor coordination with distribution system, and sales force not properly trained, etc.
4. **Pricing Problems:** Poor estimates of the price customers would be willing to pay, the price not compatible with quality of product, too high asking price due to poor estimates of cost, and not enough margin for the middleman are all possible reasons for products failing.
5. **Problems with Timing:** Introduction of a product too soon or late in the market can also be a cause for its failure.
6. **Competitive Problems:** The hard-hitting competitor strategies in regards to distribution, promotion, and price of the product may be a blow to the product in the market. The company in this situation has to react defensively instead of being aggressive. The wide range of reasons, whichleads to product failure andindicates that the success of a new product relies upon the skills and schemes of not only product innovation but also, for the implementation of the marketing strategy. During the product innovation phase, it is essential that management keep a keen eye on the target market.

A suitable organisation is needed to steer and coordinate the innovation process at all stages. Beyond ensuring that the product is introduced at the right time, the various marketing components (product, promotion, pricing, marketing channels, and distribution) have to be unified in just the right proportions during each stage of the developmental life cycle. While in the implementation stage, the marketing plan must be adaptable to changing strategies according to changing market conditions and competition.

Product Life Cycle (PLC)

Like all living things, products too have definite life cycles. A product goes through four phases from the time it is born to the time it dies.

These stages are as follows:



Therefore, the life - cycle of a product refers to the phases the product passes through from the time it is introduced, through the growing and maturity period and finally, to its deterioration and eventual death (being removed from market). Needless to say, the company introducing the product wishes for the product to be profitable and give customers the satisfaction they want for a long duration. However, this does not always take place in practice.

Businesses make every effort to be aware of what is happening during the entire life of the product in regards of sales and the resulting profits. The profit and sales volume curves vary with every product, but the general shape and the existing relationship between the two factors normally stays consistent. As previously mentioned, new products are the key to survival of businesses and for every new product, stock has to be taken of the relationship between sales volumes and profits. The relationship between the mentioned curves (sales volume and profit margin curve) has to be unmistakably understood before the marketing policy is designed.

The business establishment has to comprehend and control the different stages of the product life cycle to guarantee marketing success. The actual duration of the life of a product varies. It can last from a few weeks (in the case of fads or passing fashion trends) to many years (in case of motor cycles or refrigerators). It should also be noted that in different products the lengths of the stages varies.

Some products stay in the introductory stage for many years whereas other products get market acceptance in just a matter of weeks and are ready to move on to the next phase of the life cycle. Likewise, not all products got through all the stages in a life cycle. A product can for example, fail at the introductory stage. There may be cases where a company prefers to wait and not jump into a market until another company's product gains popularity and reaches growth or maturity phase. All products do however enter the decline and possibly the abandonment stage. This can be due to any of the three following reasons. First, there is no need for the product second, a better or cheaper product already exists in the market and third, better marketing endeavours by a competitor force a company product out of the market. Study Figure 7.2 thoroughly. It shows the relationship existing between sales volume and profit volume at the various stages of the product's life.

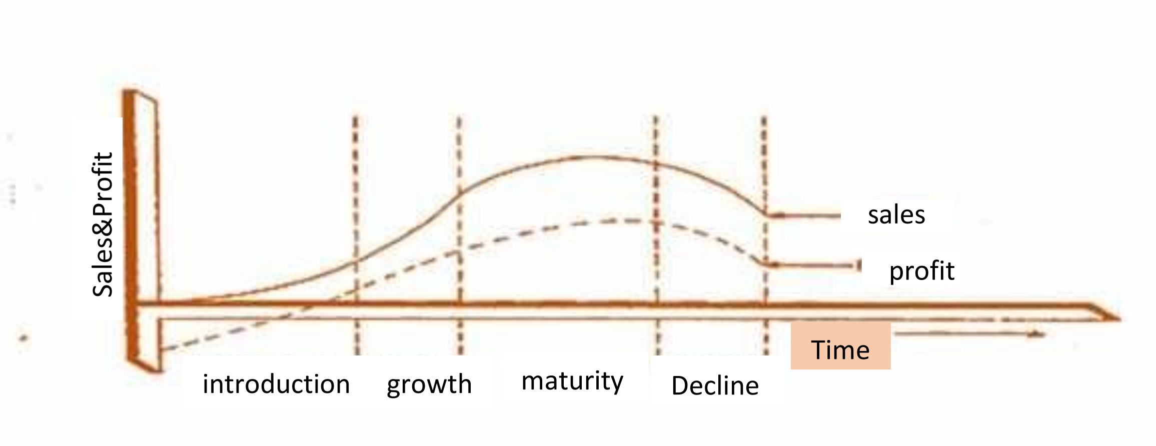


Fig: 1.2

The Introductory Stage

This is the stage in which full scale production arrangements are carried out, the marketing strategy is given the final shape, and the product is made available in the market but initially the growth rate is very slow. At this phase, since production is new and being made available for the first time in the market, it will not face opposition in the market.

The organisation has to correspont with the intended market and notify future customers of the new product launch in a grand way, thus, encountering a huge promotional expense. The advertising endeavour is also aimed at suggesting to the potential customers to purchase the test product.Additionally, it is aimed at acquiring the distribution rights at retail outlets. Great amounts of money is exhausted in attracting distributors for the new product line. Due to the high cost of promotion and limited sales volume, the profit margins of the company are very low and at times even in the red at this stage.

When there are only a few competitors offering the basic version of a new product without any further fine tunings, selling, then, has to be aimed at buyers, who can be motivated to purchase the product. At this point, the product cost is normally high since the production level is low and promotion and distribution is expensive.

The Growth Stage

Once the product is accepted in the market, meaning it is received by the consumers along with traders, it steps into the growth phase. At this point, the demand of the product will rise quickly and usually outpacing the supply. Due to the increased sales volume, the profits of the company rise too. To cash in on the increasing demand, the company gives increased sales volume topmost priority.

With rising demand of a product, many competitors start to step into the market. They begin adding new additional features to the product to make it more appealing than the original. With increased competition, the number of distribution centres also rise, resulting in higher demand to 'fill the pipeline.'

Prices usually stay at the same level or might fall slightly. Speed of promotional activities is normally maintained or even, enhanced, to confront the competition.

The Maturity Stage

To think that sales will continue to shoot up endlessly is just being too wishful. Chances are greater, that competitors will become more aggressive. In your product is a unique one, by this time the competitors will have introduced a similar product to go against yours. So, your sales will most probably be pushed down due to the competition and your advertising activities will have to go up to maintain the sales.

A point will come when sales will attain a plateau. This means the product has reached 'maturity stage' or 'saturation.' It will be too difficult to push sales any higher at this point. Profits will most likely be stable at this point or even, begin a downward trend since more promotional activities will be needed to counter competition. That is unless, your product already has the greatest market share and your product requires no extra efforts.

The Decline or Obsolescence Stage

Beyond this point, sales will begin to go down and the product will have reached the 'Obsolescence' Phase. Efforts should be made to delay or prevent this stage thereby avoid a decline. The decline can be the result of a number of reasons like changes in the customer preferences, technological advancements and inauguration of better substitutes. At this point profits decline very quickly and the last stage surfaces. Holding on to a product after this stage can be chancy and definitely not profitable for the company. So the company must decide between total desertion of the product or continuation in a limited, specialised market. The decision has to be based on the chances of opportunities remaining and the management abilities in this situation.

The Marketing Strategies at Different Stages of PLC

As a concept, the product's life - cycle is linked to the overall marketing philosophy of the company. As it not only affects product planning workouts but other factors of marketing mix like pricing, promotion and delivery. Now, let us look at the different strategies employed at the various phases of PLC.

The Introduction Stage

At the stage of product introduction, we must increase sales and so, much is spent on actual delivery and promotion. The general idea is to create familiarity and acceptance of the product. Availability of the product also has to be increased. If a product is advertised but not physically available when a customer wants to purchase it, means energy and money has been wasted. All available resources of the organisation must be fully utilized. So, the delivery must be arranged before the launch of a product. The firm may make use of skimming price strategy if there is a fear of too many competitors in the pipeline.

On the other hand, the firm can adopt the entry price policy (minimum price) just to infiltrate the target market, thus making it difficult for competitors if not impossible. Skimming price is usually more successful if competition threat in short run does not exist and the firm is certain of return on the investment from the very beginning. If on the other hand, there is a chance of competitors entering the market, and penetration strategy is more beneficial at keeping competitors at a distance.

The Growth Stage

In the Growth Stage, there are increasing expensed in every aspect of the marketing mix and the chances of growth require large financial investments. These huge economic outpourings give surety to the company of a large market share. When sales graph indicates a quickly rising trend, the firm then has to invest significant amounts to maintain production at par with rising sales. It all calls for greater production, deeper distribution penetration, and well planned pricing and promotion policy. In the growth stage, when the sales are going up and the firm is content withthe generated profits, competitors will start to step into the market and might even offer new features for the produce. Thus, the firm will have to consider improving the product so the ultimate decline stage is not reached too quickly. Hence, the advertising expenses are maintained at the existing levels or even, raised somewhat, in order to confront the competition.

The Maturity Stage

We now come to the maturity phase. This phase normally is longer lasting than other phases and proves to be difficult for the management in terms of sustaining sales levels. In reality, the growth rate of sales declines in case of matured goods. The company should consider adopting a three-point strategy.

1) Market Modification;

2) Product Modification;

3) Marketing Mix Modification.

a) In the Market Modification, the firm makes every effort to discover opportunities of locating new buyers. This is achieved by seeking new markets or new market sectors.
b) Conversely, new ways to use the same product can be found. The firm can also try repositioning the product and focus the promotional energies in a new, growing market sector. This allows for improvement in the market share.
c) By this point, the product becomes stereotyped and there exists a need to step out of the stagnant situation. This can be achieved by making changes in the characteristics of the product so it appeals to new customers or existing customers start to use it more. Product Modifications are made by improving quality, features, or style of the product.
d) A firm will try to encourage sales in the maturity stage by modifying the marketing mix techniques. It can assume from any of the given forms 1) cut price to draw new customers; 2) create advertising campaign that is more affective; 3) develop aggressive promotional material

that involves gifts, deals, contests, and free trips; 4) provide improved or new services to the customers; and;

e) provide greater incentives to channel members.

The Declining Stage

When a project enters the decline stage, various strategies need to be employed. The decline can be quick or slow. It can come about as a result of better substitute products, improved competition, more technological advances, with which the firm may not have kept up or it could be due to a number of other reasons. Such a product becomes expensive for the firm to maintain. The firm, at this point, has to be willing to let go of a project with limited or no profits. Nonstop monitoring of sales volume at every market segment is essential, so total withdrawal can be made from areas where it becomes

uneconomical to maintain the product. Management must deal with the issue of total or partial desertion of a product instead of wasting the firm's resources on barren pursuits.

Further Reading:

- ✓ Product Lifecycle Management: Volume 1: 21st Century Paradigm for Product , (2005), By John Stark
- ✓ Managing Product Life Cycle in a Supply Chain: Context: A Prescription Based, (2005),
  By Sameer Kumar, William A. Krob
- ✓ Product Lifecycle Management, (2002), By AnttiSaaksvuori, AnselmiImmonen