UNIT 5 PRODUCT LIFE CYCLE

Objectives

After leading this unit you should be able to:

- discuss the concept of Product Life Cycle
- expiain the stages in Product Life Cycle
- operationalise the PLC concept
- describe the use of PLC in Product Management Decision Making.

Structure

5.1 INTRODUCTION

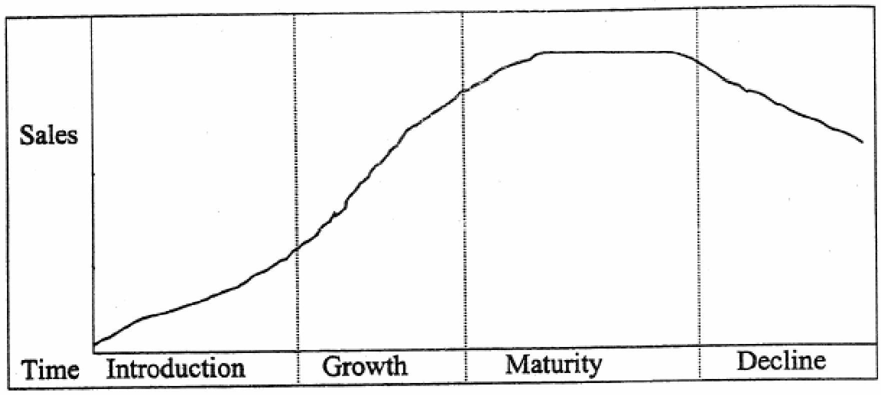
You are aware of the fact that like all living beings, everything in the market place is presumed to be going through several phases from birth until its death. A product or a brand is launched, it grows, attains maturity, and starts declining, and is buried on its death. Product is basically a need satisfier. In reality there may be several products satisfying the need of a customer. For example, the need for document and producing multiple documents was existent since the human civilization started communication. As the civilization matured, the need for documentation has also grown. This change in the need level is captured by the demand life cycle. For every need cycle there is a sequence of phases starting with emergence, accelerating growth, decelerating growth, maturity, and decline.

A product is an embodiment of technology, and the technology in fact satisfies the need. The need for document was first satisfied by mud tablets, palm leaves, copper leaves, paper and now electronic pages. You would agree that the succeeding technologies normally satisfy the need better than the predecessor. Once you consider the need for multiple copies of the same information, the modern technology would suggest use of carbon papers, cyclostyling, photocopying, printing and so on.

5.2 THEORETICAL BACKGROUND

There are different schools of thought about the causality, and utility of Product. Life Cycle concept in the marketing decision making. PLC concept is remarkably enduring mainly because of the intuitive logical richness it derives from diffusion theory of innovations, and theory of monopolistic competition.

Figure. 5.1 : Product Life Cycle



Diffusion theory of innovations explains the process of new product adoption over period of time. Both PLC and Diffusion curve are concerned with the changes in the adoption of products over time, the cumulative diffusion curve and PLC curve exhibit considerable similarity. However there is a difference in terms of the parameters used, PLC depicts absolute sales over time and the diffusion curve relates cumulative percentage of potential consumers over time. *Diffusion* theory presents a five-stage adoption process, starting from, innovators, early adopters, early majority, late majority, and laggards.

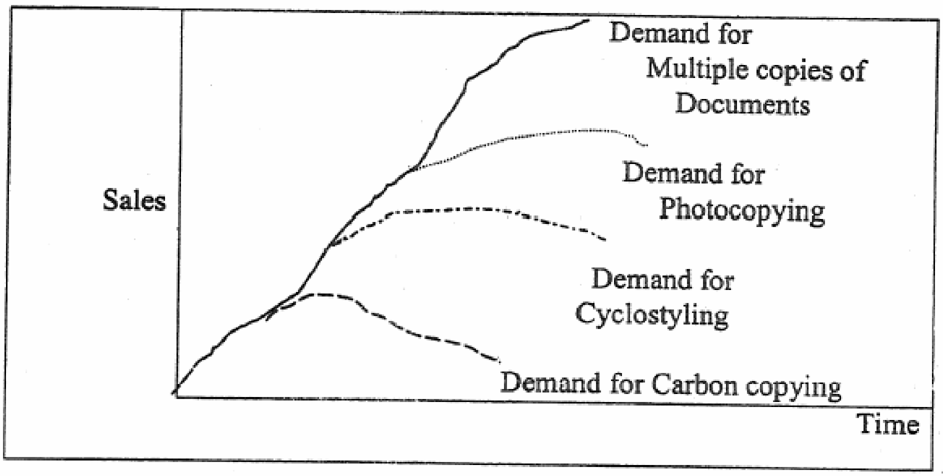
Monopolistic competition theory elaborates the behaviour of firms over the PLC. Monopolistic competition describes a market situation where many firms are selling the product that are similar, but not perfect substitutes for each other. In the initial stage the number of firms in the business will be lower, many players would not enter the market due to risk involved in the new product. Once the product acceptance is realized more firms would enter the market, this leads to the growth in the market. During the maturity stage, the number of firms entering and number of firms leaving the market would be more or less equal. On the decline, only those firms, which choose to specialize, would stay in the market and others would leave the market. Monopolistic Competition theory explains the variations in the number of firms in different stages of PLC.

Levels of PLC

PLC can be used to analyze different levels of product, a product category, a product form, a product, and a. brand.

Product Category is a very broad level, referring to the basic service or product satisfying the need. Hence, product category exhibits a longest life cycle. Product forms normally follow the standard PLC. Products may exhibit several variants, and brands can have shorter or longer PLC. A few brands have very long PLC, for example Lifebouy, Lux, have seen generations of consumers and on the other hand many brands have seen premature death also.

Figure. 5.2 : PLC for Different Product Classes



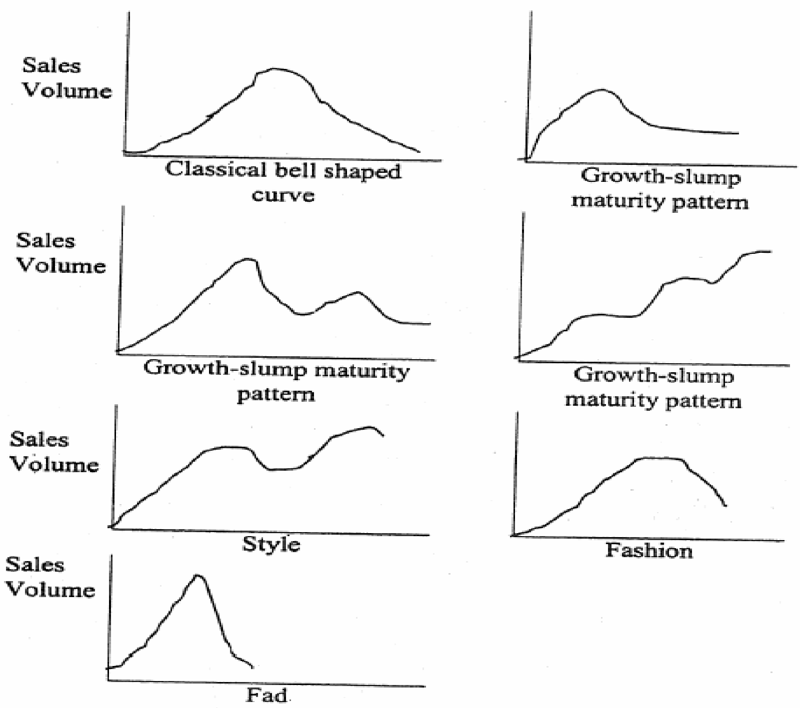
Shapes of PLC

Products go through different PLCs; there are several shapes that can be observed in practice. The shapes commonly reported are classical bell shaped curve, growth-slump maturity pattern, cycle-recycle pattern, scalloped pattern, style, fashion, and fad.

Growth-slump maturity pattern, exhibits an initial growth, followed by a decline and stability for fairly long time.

Growth-slump maturity pattern display a multi-modal shape due to the different promotional mechanisms adopted by the marketers,

Figure 5.3 : Shapes of PLC



Growth-slump maturity pattern manifest successive growths and declines over time.

Growth-slump maturity pattern is a basic and distinctive mode of expression appearing in a field of human endeavour. Style may last for generations and also exhibit cyclic appearance and disappearance. Fashion is a style currently in vogue. Fads are fashions, which are adapted and decline very fast.

The Product Life Cycle Concept

You are aware that a product or brand goes through several phases from birth until its death. Firstly a product is launched; it grows, attains maturity, then starts declining and finally is ironed out. Accordingly the product life cycle is explained by the following stages; (i) Introductory stage; (ii) Growth stage; (iii) Maturity stage and (iv) Decline stage.

Introductory Stage

The introductory stages of a product are believed to be relatively slow, even after *its* technical problems have been ironed out, due to a number of marketing forces and consumer behaviour factors. The major marketing obstacle to rapid introduction of a product is often distribution. Retail outlets are often reluctant to introduce new products, and may prefer to wait until a track record has been established before including them. in their stock.

Consumer acceptance of new products tends to be relatively slow. The newer the product, the greater the marketing effort required to create the demand for it. The length of the introductory period depends on the product's complexity, its degree of newness, its fit into consumer needs, the presence of competitive innovations of one form or another, and the nature, magnitude and effectiveness of the introductory marketing effort.

At this stage it is usually assumed that there are no competitors, the market structure is defined as 'Virtual Monopoly'. But there are very few really radical innovations with no existing substitutes. Most new products and services face considerable competition from existing products, and also experience severe competitive pressure from other new products.

There are many cases where two firms introduce similar products almost at the same time, which is possible if the two companies. are working on similar technological developments. On noticing success of test market conducted by one company others may follow suit with similar products. If two or more firms introduce products at about the same time, the result is likely to be a shorter introductory period. The length of the introductory period is a crucial aspect of PLC. From managerial point of view, shorter this stage the better.

The consumers who buy the product in the introductory stage itself are called innovators, and those who buy later are called late adopters or laggards. This may be misleading, for example a buyer who hears about a product for the first time two years after its introduction buys it at once. Can this individual be considered a laggard?

Growth Stage

The growth stage begins when demand for the new product starts increasing rapidly. I> innovators are satisfied with the trial, they move to repeat purchase. They then influence others by word-of-mouth, which is often considered the most effective mode of communication. The product availability and visibility in distribution and in use (e.g., new cars on the road) tend to bring new triers into the market. At this stage, the entry of competitors increase the total demand for the product through their advertising and promotional efforts.

Maturity Stage

The maturity or saturation stage occurs when distribution has reached its planned or unplanned peak and the percentage of total population that is ever going to buy the product has been reached. Volume (reflecting the number of customers, quantity purchased, *and* frequency of purchase) is stable. At this stage it becomes difficult to maintain effective distribution, and price competition is quite common.

Decline Stage

Changes *in* competitive activities, consumer preferences, product technology and other environmental forces tend to lead to the decline of most mature products. If decline is for a product and not brand, producers may withdraw from that product category. The typical reason for a product decline is the entry of new products and decreased consumer interest in the specific product. One of the few options left for keeping a brand alive is price reduction and other drastic means that depress the profit margin and leads to product withdrawal

Product decline occurs even when most customers no longer buy the product, only few loyal customers remain. The latter continue buying the product inspite of no advertising or promotional compaign. The company may decide to follow a `milking strategy'

i.e., retain the product with meager marketing support as long as it generates some sales. But this requires maintaining distribution of the product, which becomes less profitable. The marketing implication often-presented for the various PLC stages, and summarized Exhihit.5.1

Exhibit 5.1
PLC: Marketing Implications, and Strategies

Effects and Responses	Introduction	Growth	Maturity	Decline
Characteristics of the stage				
Consumers	Innovators	Early adopters	Middle Majority	Laggards
Competitors	Few, hence less important	Growing in numbers, and followers	Stable, intense competition	Declining, shakeout
Sales	Low sales	Sales will be growing rapidly	Stagnating sales	Declining sales
Profits	Negligible due to high production and launch costs	Peaks due to growing demand	High profits	Declining profits
Costs	High cost per consumer	Cost starts declining	Low cost due to higher volume	Low cost per consumer
Marketing Objectives				
	Establishment in the market: Creating product awareness and trial	Market penetration: Increasing market share	Defend the market shares, brands	Cost cutting, Milking the products.
Marketing Strategies				
Product	Basic product offering	Augmenting products	Diversification of brands and models	Divesting weak products
Distribution	Building distribution selectively	Intensive distribution	Retention of higher shelf space	Unprofitable ones are phased out
Price	High, cost plus to recover the cost of introduction	Price to penetrate the market	What consumers can bear and best competitors are offering	Low price
Advertising	Building awareness especially targeted innovators and distribution channels	Mass communication	Stress on brand differences	Reduced just to retain loyal consumers
Sales Promotion	High to increase trials	Moderate	High to build loyal consumers	Low

Sources: Kotler P Marketing Management
Wind Y J Product Policy

5.3 PRODUCT LIFE CYLE (PLC) – AN AID TO PRODUCT PLAING

The Product Life Cycle concept as a tool of product planning has had its share of criticism as well as support, Let us look at some empirical evidence in this context.

The S Shaped logistic curve *has* been widely accepted as a representation of the life cycle of a product, having four discrenible stages; a log phase (introduction), an exponential phase (growth), a stationary phase (maturity and saturation) and a decline phase.

The empirical support for the S shaped product life cycle is not universal and the evidence regarding its validity is, therefore, not conclusive. The general pattern shown above was found to exist in certain product classes Puzzle and Cook in their study of 192 consumer products in 1969 found that 52 per cent of the products followed the general pattern of product life cycle. A number of studies on industrial products also showed that a fairly large percentage of them approximate the PLC representation.

Sales of `mature' products however, did not necessarily follow the predicted pattern. Three variations in the maturity phase were observed -- the expected stable maturity, a growth maturity due to changes in the market variables, and an innovative maturity due to some innovations introduced in the product. Similarly for the decline stage, it has been shown *that* the stage is not inevitable for products like evaporated milk, bread etc.

It must however, be clearly understood that products do not follow a natural and inevitable cycle of birth, growth and death as organisms do. The product life cycle that they follow is, to a large extent the result and not the cause of marketing strategies. The sales and profit graphs do respond to marketing inputs and a sales decline does not necessarily mean *that* the product has entered an irreversible decline phase. As the life cycle stages do not have predictable duration and inevitable sequence, the product life cycle concept can at best be used as a general guideline for planning future action. It has to be supplemented by a deep and thorough study of the market and competitive conditions .characterising a product in order to serve as a productive or planning tool. The usefulness of PLC concept varies in different decision situation. As a planning tool, it emphasis the type of main marketing challenges a product is likely to face in the different phases, and suggests major alternative strategies that may be followed at each stage. As a tool for control, PLC concept enables comparison of product performance 'against similar products in the past. It has got a limited utility as a forecasting tool as sales histories of products differ widely and the life cycle stages exhibit varying duration.

5.4 OPERATIONALISING THE PRODUCT LIFE CYCLE

In order to utilize the product life cycle effectively it is necessary to understand how one can unambiguously determine the position of a product in the context of its life cycle. Putting the PLC concept into operation would require following decisions to be taken:

a) Deciding upon the unit of analysis

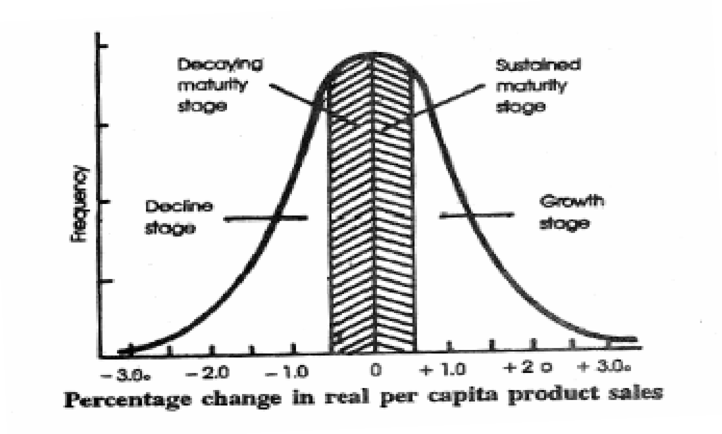
As the actual shape of product life cycle curve may differ for product form, product class, an individual product and a brand it, is important to decide which particular unit of analysis is being considered. The PLC analysis can be undertaken for each of these units both at the firm and the industry level. The importance of explicitly defining a unit of analysis will become apparent to you when you consider an example of say, should all TV Sets be considered or the focus should be on either black and white or Colour sets, or portable v/s non-portable ones - it is apparent that no set rules can be prescribed at to the correct unit of analysis. Based on. their needs and intention of how to use the PLC, management should define and select the relevant unit of analysis.

Definition of relevant market

Normally, the PLC approach assumes a single homogenous market, which is further segmented by the difference in adoption behaviour of the consumers i.e. the early adopters, late adopters and finally the laggards. Generally PCL studies focus on the product sales at the total market level, it is sometimes useful to consider the PLC by type of market (for example international v/s domestic market), distribution pattern (direct v/s retail distribution) or market segment (organisational buyers v/s individual buyers).

Identification of the products stage in the PLC

In order to use the PLC concept one would need to answer two related questions (a) how to determine the stage of a product in the life cycle (b) how to determine when the product moves from one stage to another. Since the shape of the PLC curve varies widely for products as does the duration of the different stages, it is not possible to assess the stage of a product in the life cycle and its transition to another stage merely by observing the historical sales graph of the product. Let us consider the operational approach suggested by Polli and Cook as represented in Figure below:



The approach is based on the measurement of the percentage change in real sales from one year to the next. These changes are plotted as a normal distribution change in real sales from year to year is then measured. Products having a percentage change less than -.5 are classified as being in the decline stage, those having percentage change greater than .5 were classified as being in the growth stage while those in the range of +.5 were classified as being in the maturity stage, which was further divided into decaying maturity and stable maturity.

As far as the duration of a stage in the PLC of a product and the exact point in time, of the transition of a product from one stage to another, no generalised conclusions can be drawn. Since the duration of each PLC stage depends on a large number of variables like product characterisation market acceptances and competitive action.

Defining the Unit of Measurement

Though most analysis of PLC are based on actual sales it is important to determine:

a) Whether to use unit sales or rupee sales as unit of measurement.

b) Should actual sales figures or adjusted sales figures be used.

c) Should real or projected prices be used as units of measurement.

d) Should sales be allowed to function as the sole yardstick or other criteria like profit and market share be used to estimate PLC curve.

Determining the time unit

Annual data generally forms the basis of PLC analysis. As the life periods of products are shortening and as some classes of products are prone to wide seasonal fluctualtions,- it may sometimes be considered desirbale to use quarterly or monthly data to develop PLC graphs. Depending upon its needs and the product characteristics, management must decide in advance what should be the unit of time chosen.

Activity 2

Pick up two product each from CG and consumer durables of your choice. Identify the stage of PLC that there are in and suggest implications for product planning and product innovation using PLC.

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Product Life Cycle -- As a Tool To Plan Market Share Strategies

Determining the market share strategy of a product is also one of the key factors in product development. When a product manager is faced with a number of products which are doing well presently he has to come to a decision regarding the long term market share target for each of the products. Given the market share to be obtained the other -elements of the marketing mix can then be decided upon. How do we go about making decisions regarding the market share objectives? What criteria do we use? A framework to evaluate a products position vis-a-vis its long term growth prospects has been developed by Bernard Catry and Michel Chevalier. Let us try to understand the proposed framework in the next section.

Framework Suggested: The first market criterion used is the stage in the product life cycle the product is in. This gives a good indication of the trend in demand as well as competitive patterns. The three phases of a product life cycle used here are introduction, maturity and decline.

The second criterion consists of placing the. firm into three categories on the basis of its market share. A firm can therefore be placed in (i) small market share (ii) average position (ii) dominant position.

On the basis of these two criteria the firm can choose whether to (i) increase its position (ii) maintain its position at the same level; (iii) reduce its market share.

The table 1 given below indicates the different alternative positions that exist over time in a product group. Each cell corresponds to a different investment or a different expected gain. The term investment in this case means that a firm deciding to increase its position at the introductory stage must make production and marketing investments that will enable it to increase both its brand awareness in its market coverage and its production facilities. On the other hand, a firm which has to maintain its position in a slow growth market may not require as much investment. In the table, the amount of investment necessary is suggested by the number of pluses and minuses following the letter I, while the amount of expected cash return is indicated by pluses and minus following the letter E. An overall value can thus be obtained for each cell by computing the arithmetic sum of cash investments and expected cash returns in the short run. This forms a basis for comparison to arrive at a decision on the appropriate strategy.

Table I : Market Share Diagnosis

Strategic Alternatives	Product Life Cycle: Market Share Position of the Firm								
	Introduction				Maturity			Decline	
	Small	Average	Dominant	Small	Average	Dominant	Small	Average	Dominant
Increased	I + +	I + +	I + + +	I + +	I + + +	I + + + +	I +	I + +	I + +
Investment	$E+++^{1}$	$E++^{(0)}$	$E++^{(1)}$	$E+^{(1)}$	$E+^{(2)}$	$E+^{(3)-}$	$E--^{(3)}$	$E---^{(5)}$	$E----^{(6)}$
Maintaining	I	I +	I + +	I	I	I	I +	I	I - -
Position	E^{0}	$E+^{0}$	$E++^{0}$	E^{0}	$E+++^{3}$	$E++++^{4}$	$E-^{2}$	$E+^{1}$	$E++^{3}$
Disinvestment	I	I -	I -	I -	I - - -	I - - - -	I -	I - - -	I - - -
	E^{0}	E^{1}	E^{0}	$E+^{2}$	$E+++^{6}$	$E++++^{4}$	E^{1}	$E++^{4}$	$E++^{5}$

I = Amount of investment required.
E = Expected Cash Return
Numbers indicate the overall financial value for the cell (E - I)

The action implications arising out of this table can be summarised as under:

i) In the introduction stage of the product life cycle the best short term strategy for a weak brand is to invest in market share. On the other hand, for the dominant firm the best strategy would be to harvest;

ii) Finns with a small market position are advised not to invest for more market share at a very late phase of development of the market.

Activity 3

Consider a very mature market, say that of refined vegetable oil as a cooking medium. You. are aware of the competitors and their approximate market position for this product. On the basis of the PLC/market share position - if a competitor has a small market share in this market what should be the marketing strategy in terms of investing in more market share or disinvesting?

Hint: Draw the PLC of ground oil (refined) as a cooking medium.

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5.5 PRODUCT LIFE CYCLE'AS A GUIDELINE FOR MARKETING STRATEGY

In considering the possible relationship between marketing strategy and the product's life cycle, one should see whether companies should adopt their marketing efforts according to the product life cycle or whether the firm's marketing strategy can change the course of the product life cycle. But unfortunately most studies of the determinants of product sales are not concerned directly with the product's PLC. Knowledge of the product's stage in its life cycle gives useful but only pa:6zl input for the design of product's marketing strategy.

Recommendations have frequently been made concerning the type and level of advertising, pricing, distribution, and other product/marketing activities required at each of the product life cycle stages. Some of the more common recommendations are discussed below but should be viewed as hypotheses, and not facts or normative prescriptions.

ADVERTISING :

In the introductory stage, advertising informs customers about the existence, advantages, and uses of new products. During the growth stage -advertising stresses the merits of the products in comparison to competing product. In the maturity phase, advertising attempts to create impressions of product differentiation. It appeals to pride and non-economic utilities. Massive advertising campaigns attempt to attract attention. Finally in the decline stage, the percentage of sales going into advertising decreases.

PRODUCT CHANGES:

Product changes to be made at each stage of the product life cycle are as follows:

Introduction: new product; Growth: product modification; Maturity: product modification and differentiation; Saturation: product modification, differentiation and diversification; and Decline: product diversification.

When a product is introduced in a single version (accompanied by various product problems and "buys"), at the growth stage, the product is improved. While at the maturity stage new versions are introduced. At the decline stage, stripped down versions are introduced.

PRICING :

Price is usually believed to be high at the introductory period and to decline with the product life cycle stages, as it becomes an increasingly important competitive weapon, especially at the later stages of growth, maturity and decline stages.

Although price-cutting is quite common in many industries as the product matures (e.g.: Reduction in prices of pocket calculators and digital watches over a period of just a few years in the early seventies), many managers prefer to engage in non-price competition. Price cutting in the saturation stage although common, is far less important than changes in the product, promotion, and distribution policies.

In determining the product's price strategy, not only the introductory price should be considered, but also what the next move might be, given alternative competitive actions. A relatively low introductory price should not be ruled out automatically but should be fully examined.

DISTRIBUTION :

Initial distribution is believed to be spotty and to reach its full coverage at the growth stage, when retail outlets are seeking the product. At the maturity stage, retail outlets are the first to suffer from changes in consumer purchase patterns; hence manufacturers may start losing outlets. At th6 same time, efforts are made by manufacturers to establish new methods of distribution (bypassing, the wholesales, for instance) and new outlets (direct mail, for example).

The above attempts to prescribe a marketing strategy and guide the allocation of marketing resources over the stages of a product's life cycle assumes that at any one stage of the PLC the firm has only a single reasonable' marketing strategy it can flow. This is misleading as it constrains -management's creativity in generating new marketing strategies and ignores differences among products, markets and firms..

Activity 2

Identify two Indian companies who were able to extend the life cycle of their respective products. Comment on the attributes which enabled these companies to do so.

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5.6 SUMMARVY

Product life cycle is one of the enduring and widely publicized frameworks in the marketing literature. Both, theory of innovations and diffusion, as well as theory of monopolistic competition very well endorse this framework. In this model it is conceptualized that product goes through four distinct phases, namely introduction, growth, maturity, and decline. There are controversies about the causality of product life cycle, hence, it is important to take adequate precaution while applying PLC concept for decision making. PLC can be of several shapes, like classical bell shaped curve, scalloped, style and so on. Further, PLC can be viewed from different levels of product, like core product, product category, brand and so on. The shape may change depending on the served markets also. In marketing literature several. prescriptions have been proposed for using PLC for marketing strategy formulation. However, it is important to consider the decision context, product in question, market condition and other factors before using PLC for strategy formulation.

5.7 SELF-ASSESSMENT QUESTIONS

1. Briefly describe each of the four distinct stages of the product life cycle by taking an example each from consumer and industrial products you are familiar with.
2. Marketers should view PLC as an indication of opportunities to a firm. Discuss in the light of Product Planning and Business Strategy of the firm.

5.8 FURTHER READINGS

Kotler, Phillip, *Marketing Management,* Prentice Hall of India Pvt. Ltd., New Delhi 2002

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Wind Y J, *Product Policy. Concepts, Methods, and Strategy,* Addison-Wesley Pub Co. Reading 1982.