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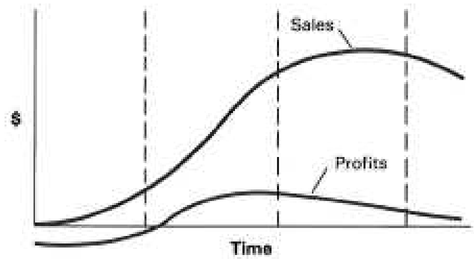
A.15 Product Life Cycle

THE CONCEPT OF THE PRODUCT LIFE CYCLE

The product life cycle is one of the most often quoted and most frequently written about concepts in marketing. It holds that products go through a cycle of birth, life, and death much as living organisms do. The concept serves marketers as a useful guide in designing product marketing strategies.

The Form of the Product Life Cycle. The **product life cycle** traces the change in product sales over time. In its classic form, shown in Figure A.15-1, the cycle is divided into four stages: introduction, growth, maturity, and decline, each with different sales and profit expectations.

- *Introduction.* During introduction, sales start at zero and increase at a slow, but increasing rate. Profits at this stage are likely to be negative because the heavy expenses of introduction are not immediately offset by sales.
- *Growth.* During growth, sales increase rapidly, climbing initially at an increasing rate and then at a decreasing rate. Growth is the period of maximum profits. Sales are strong and competition has not yet put downward pressure on prices to narrow margins.
- *Maturity.* During maturity, sales grow to reach their peak and then level out or decline. Profits decline slowly in response to competitive pressure. The maturity period may extend for many years.
- *Decline.* During decline, both sales and profits decrease until the product is withdrawn from the market.



Stage	Introduction	Growth	Maturity	Decline
Sales	Slow growth	Accelerating growth	Leveling off	Declining
Profits	Negative	Maximum	Declining	Declining

FIGURE A.15-1
The Product Life Cycle with Sales/Profit Behavior

In utilizing the product life-cycle concept, care must be taken in selecting an appropriate level of aggregation. Product life cycles can be defined for a product class (restaurants, for example), a product form (fast food restaurants), or a particular brand (McDonalds). Generally, the middle class, product form, tends to be the most useful. Product classes have such long product life cycles that changes in stages are too far off or too gradual to give strategic guidance. Life cycles for brands are the opposite; they are too volatile and too erratic to give guidance. A related problem is deciding when a new product introduction should be treated as creating a new product life cycle rather than continuing an existing one. Abell suggests that a new life cycle is called for when a distinguishable technology is applied to a particular situation for a separate consumer segment.[1]

Variations in the Product Life Cycle. In addition to the classical form described above, variations in both the stages and the sales curve of the product life cycle have been suggested.

[1]Derek F. Abell, *Defining the Business: The Starting Point of Strategic Planning* (Englewood Cliffs, N.J.: Prentice Hall, 1980), p. 208.

Wasson proposes addition of a preintroduction development stage before introduction and divides the maturity phase into two stages, competitive turbulence and saturated maturity.[2] Enis, LaGarce, and Prell also divide the maturity phase into two parts. They term the first part "maintenance" in which the marketer attempts to maintain market stability for the product. The second part is called "proliferation" because the product is marketed in many different varieties to appeal to additional market segments.[3] Buzzell similarly divides maturity for some products into two stages, the second being innovative maturity during which faster growth product varieties are added to the stable product forms.[4]

Life-cycle researchers who have traced the actual life cycles of products have found the classical "S" curve with its slow initial growth, accelerating growth, leveling, and then decline, but they have also found other life-cycle curves. Cox, in his study of prescription drugs, found six different sales patterns represented.[5] Of the six, the most frequently represented was the cycle/recycle curve and the second was the more classical "S" form. These are shown in Figure A.15–2. Schultz and Rao, in their study of household durables, found the same six sales curves, but half the cases showed the classical "S"-shaped curve.[6] Buzzell, who studied life cycles of food products, found that most fit the classical form, but found three different

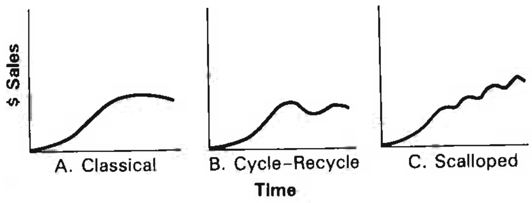


FIGURE A.15–2
Alternate Product Life-Cycle Sales Curves

forms of sales behavior for mature products. Some showed great stability in sales ("stable maturity"), some showed steady growth during maturity ("growth maturity"), and others showed the innovative maturity described above.[7] Levitt proposes a maturity phase that shows a scallop pattern of periodic renewal, also shown in Figure A.15–1, that is similar to the innovative maturity idea.[8] Overall, it appears that the classical "S"-shape life cycle is the most likely, but it is by no means guaranteed. Reasons for these variations will become more apparent as we discuss the causes of the product life cycle.

Causes of the Product Life Cycle. Two related factors underlie the product life cycle. They are the process of **new product adoption** (GLOSSARY entry A.12) and changes in the competitive environment or **competitive market structure** (GLOSSARY entry A.1).

A new product is usually introduced by a single firm that enjoys a temporary monopoly. Since most consumers lack awareness of the product and are reluctant to accept the risk of a new product, initial acceptance is limited to the small innovator group. As the introducing firm promotes its new product, the product begins to attract a larger group of early adopters and at the same time the product's success attracts competitive entries each attempting to gain entry through

[2]Chester R. Wasson, *Dynamic Competitive Strategy and Product Life Cycles* (St. Charles, Ill.: Challenge Books, 1974), pp. 2–9.

[3]Ben M. Enis, Raymond LaGarce, and Arthur E. Prell, "Extending the Product Life Cycle," *Business Horizons* (June 1977), pp. 46–56.

[4]Robert D. Buzzell, "Competitive Behavior and Product Life Cycles," in *New Ideas for Successful Marketing,* ed. John S. Wright and Jac L. Goldstucker (Chicago: American Marketing Association, 1966), pp. 46–68.

[5]William E. Cox, Jr., "Product Life Cycles as Marketing Models," *Journal of Business* 40 (October 1967), pp. 375–84.

[6]Stanley R. Schultz and S. R. Rao, "Product Life Cycles of Durable Goods for the Home," *Journal of the Academy of Marketing Science* 14 (Spring 1986), pp. 7–12.

[7]Buzzell, "Competitive Behavior."

[8]Theodore Levitt, "Exploit the Product Life Cycle," *Harvard Business Review* (November–December 1965), pp. 81–94.

FIGURE A.15–3

Competitive and New Product Adoption Changes by Life-Cycle Stage

Stage	*Introduction*	*Growth*	*Maturity*	*Decline*
Competition	Single competitor, monopoly	Rapid entry of competitors, monopolistic competition	Squeeze out of marginal firms, oligopoly emerges	Firms exist, oligopoly
Adopter category	Innovators	Early adopters, early majority	Early majority, late majority	

product improvement and differentiation. The promotional efforts of competition accelerate sales growth and the product moves into the growth stage of the life cycle. The growth stage sees a continued influx of new competitors, an increase in promotional pressure in the market, and introduction of the product to additional consumers (the early majority) through promotion and word of mouth.

Later, with the influx of new competition and as the addition of new consumers to the market slows, the product's sales growth rate slows and the market enters maturity. During maturity, the market is largely dependent upon repeat or replacement purchases by existing customers rather than new customers. With a large number of competitors vying for a relatively fixed group of consumers, competition in the market becomes intense. Products become more homogeneous as successful product features are copied and price competition becomes intense. Competitors strive for market share to gain sales volume and the **experience curve** benefits of lower costs. Smaller competitors with unfavorable cost structures are acquired or driven out of business and the market becomes more concentrated, moving towards oligopoly. This may result in a more stable market with competitive efforts focused on promotion of relatively minor product differences and on distribution. Most products stay in this maturity phase for extended periods of time.

The decline stage comes about with a major change in the competitive situation as a new product, often backed by a new technology, usurps the market of the mature product and begins its own product life cycle. The mature product is thrown into decline as consumers abandon it in favor of the new product. Competitive and new product adoption changes by life cycle stage are summarized in Figure A.15–3.

The variations in the product life-cycle phases and sales curves described earlier can be explained by these same two forces. The competitive turbulence phase proposed by Wasson reflects competitive efforts to gain market share in a market with a declining growth rate. Some call this the "squeeze out" phase as many firms are forced to merge or leave the market. The proliferation, innovative maturity, and scalloped sales growth patterns seen in late maturity are the result of marketing strategy responses to a no-growth market as competitors seek to reignite growth and capture greater market share.

These nonclassical market growth patterns demonstrate that the marketer should not treat the product life cycle as an entirely **uncontrollable variable** to which the product must adjust. The product life cycle does not represent a fixed and inevitable pattern, but is in part caused by the marketing activities of competitors. The marketing strategy adopted by an individual competitor can change the growth rate of the sales curve or extend stages of the cycle. Cox, for example, discovered that the cycle-recycle sales curve found for ethical drugs resulted from use by drug firms of a promotional "hypo" at the end of the maturity phase in order to reignite sales growth.[9]

[9]Cox, "Product Life Cycles as Marketing Models," p. 383.

APPLICATION OF THE PRODUCT LIFE CYCLE TO MARKETING DECISION MAKING

Although the product life cycle has some limited application as a forecasting tool, its major use is in guiding the marketing strategy of current and new products. Before application to any of these decisions, it is necessary to estimate the current life-cycle stage of the product class or product form on which the decision centers.

Identifying the Product Life-Cycle Stage. An important part of the product life-cycle concept is the idea that different stages of the product life cycle call for different marketing strategies. Using the product life cycle in this way requires knowing the stage in which the product currently competes.

The product life-cycle stage can best be estimated by examining the pattern of product class sales, profits, and competitive activity and comparing the results to the expected results by life-cycle stage as summarized in Figures A.15–1 and A.15–3. For example, if class sales for a product were found to be experiencing accelerating growth with profits at peak levels and competitors still entering the market, this would indicate the product was in the growth stage.

In practice, there are several difficulties in identifying the product life cycle stage.[10]

- *Indistinct Boundaries.* The boundaries between life-cycle stages that appear so distinct in hypothetical examples are often difficult to identify in practice. The sales, profits, and competitive measures may give erratic readings or may be inconsistent with each other.
- *Choice of Measure.* Changes in sales and profits that look like life-cycle changes may be caused by other factors such as the general business cycle, changes in population, changes in the price level, or changes in levels of personal consumption. Polli and Cook recommend using measures from which effects of population, consumption level, and price level have been removed.[11]
- *Life-Cycle Variations.* As illustrated earlier, the product life cycle does not always take the classical shape shown in Figure A.15–1. In examining sales and profit figures, the marketer should be aware that actual cycles show erratic rather than smooth growth, may have small cycles within the longer-term cycle, may have shapes with multiple tops during maturity, or may have extended periods of no growth at all.

The Product Life Cycle as a Forecasting Tool. Although not one of its major applications, the product life cycle is sometimes used as a **sales forecasting** tool (see GLOSSARY entry A.16). In this use, a curve is fit to historical sales figures for the product. Using this curve, the current stage of the product life cycle is estimated. The expected course of the product life cycle is then used to project future sales.

A related use of the life cycle is predicting from early sales or test market results the early life-cycle stages of a new product. The models used to generate these forecasts and to give early prediction of new product success utilize the S-shaped product life-cycle curve (see GLOSSARY entry C.18).

Application to Marketing Strategy Formulation. The major application of the product life cycle is as a guide to the formulation of marketing strategy. This includes assistance both in **positioning** and in the **marketing mix.** How is the product life cycle applied? Each stage of the product life cycle is believed to call for a different marketing strategy to respond to the changed competitive environment. If the marketer knows the current life-cycle stage and, thus, the upcoming life-cycle stage, it should then be possible to predict and prepare the marketing strategy changes that will be necessary for the product. To use the life cycle in this way, it is necessary to know what marketing strategy ele-

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[10] See George S. Day, "The Product Life Cycle: Analysis and Applications Issues," *Journal of Marketing* 45 (Fall 1981), p. 64.

[11] Rolando Polli and Victor Cook, "Validity of the Product Life Cycle," *Journal of Business* 42 (October 1969), p. 388.

ments are appropriate at each stage. These are presented below and summarized in Figure A.15-4.

- *Introduction.* During the introductory stage, the innovating firm, with no competition, positions the new product against the total market rather than a single segment. The product is unique to the market place, but there is usually only one general purpose design. Promotion focuses on developing **primary demand** for the product since there are no competitors with whom to share the market and only one brand is available to consumers. **Sales promotion** is frequently used to encourage consumers to sample the product and to offer incentive to the trade to stock the product. During introduction strong emphasis must be given to building the distribution channel and establishing initial distribution. In an attempt to recapture development costs, product price during introduction may be higher than during later, more competitive phases. However, some marketers use **penetration pricing** during introduction to speed market development, gain dominant market share in anticipation of **experience curve** effects, and discourage competitors from entering the market (see GLOSSARY entry C.19).
- *Growth.* As the growth stage approaches, the marketer must adjust the product marketing strategy to anticipate more competitive conditions. The follower products will usually enter the market by segmenting, thereby attacking the weakness of the innovator's generic product and total market positioning. This creates a dilemma for the innovator who may be reluctant to give up the total market to focus on and defend a specific segment. Nonetheless, it is usually the best strategy. During growth, product differentiation and tailoring of products to the needs of particular segments are essential to support entry into and defense of segment positions. Downward pressure on prices will begin, but with products differentiated and the market growing, it will not be severe. Distribution efforts should focus on gaining more intensive product availability and on beginning to build channel loyalty. With industrial selling, emphasis is on technical assistance and service to respond to customer unfamiliarity to build the account relationship. During the growth stage, promotion shifts from building primary demand to building **selective demand.** Promotion begins to stress the product differences and product advantages with greater focus on specific segments. Promotional budgets will be higher in total, but lower as a percentage of sales.
- *Maturity.* The maturity phase is dominated by consolidating competition and the desire to be among the survivors in the market. In order to gain market share and the cost economies that come with increased volume, marketers often introduce multiple product varieties, each directed to a different market segment. **Segments** will have multiple entries and great importance will be placed on effective positioning. Downward pressure on prices may be

FIGURE A.15-4

Marketing Strategy Elements by Stage of the Product Life Cycle

Stage	*Introduction*	*Growth*	*Maturity*	*Decline*
Target market	Total market	Segment	Multiple segments	Stable
Product	Unique, generic	Improvements	Minor differentiation, multiple products	Little change
Price	High	Slightly lower	Lower, competitive	Stable or up
Distribution	Establish channel	Increase intensity	Maintain intensity	Selective
Promotion	Primary demand, awareness, high A/S, sampling	Selective demand, higher ad $	Product differences, lower A/S, sales promotion discounts	Reminder ads, lower budget, low sales promotion

severe, with price wars a danger as larger firms with cost advantages try to gain share at the expense of smaller firms. Product differentiation will be difficult to maintain as successful features are quickly copied. However, continued efforts at product differentiation will be important to provide a basis for promotion. Advertising and sales promotion budget levels will remain high in total, but continue to decline as a percentage of sales. Advertising will emphasize product differences even though they tend to be minor. Sales promotion will increasingly be used to provide discounts to consumers and the trade without drawing price retaliation from competitors. Industrial sales will become increasingly dependent on meeting competitive prices. Competition in the channels of distribution will become intense as the major brands each seek to maintain intensive distribution and increase representation in key outlets in the face of a nongrowing market.

- *Decline.* When a market begins to decline, sales volume drops and competitors begin to exit the market. In many cases, a strategy can be developed to profitably milk a declining market for many years. The still loyal customer group needs to be identified so efforts can be focused on them. Marketing costs need to be cut wherever possible to maintain margins in the face of shrinking volume. Product design can be held stable and distribution costs cut as product availability becomes more selective. Promotion should be reduced. Low-level reminder advertising can be used to keep loyal customers and the distribution channels aware of the product. There should be little need for sales promotion except, perhaps, to hold distribution. Price should be held stable or even raised if customer loyalty will permit. This strategy can be maintained until the product becomes unprofitable and is a candidate for **product elimination** or until a decision is made to reintroduce the product.

Special Strategic Considerations in Maturity. It was noted earlier that the shape and the duration of the product life cycle are in part under the control of the marketer. At every stage, the marketer should consider what strategic moves will be necessary to meet competition. During the early stages, the marketer should concentrate on strategies that will result in a large and secure position during maturity, usually the longest stage. During maturity, in addition to defending market position, the marketer may wish to shift attention to extending the life of the cycle and reigniting growth when it slows. Levitt suggests four "market stretching" policies that the marketer might employ to keep a product profitably alive.[12]

- Promote more frequent usage of the product among current users.
- Develop broader usage of the product among current users.
- Expand the market by attracting new users to the market.
- Find new uses for the product.

It is programs such as these that create the product life-cycle variations described earlier. Levitt reported that the market stretching policies described above result in the scalloped maturity phase. Promotional hypos just before decline were said to result in the cycle-recycle curve and the new product versions of Buzzell's innovative maturity resulted in reignited growth.

Application to New Product Entry Decisions. The product life cycle can be used to guide new product decisions.

During **strategic market planning,** the product life cycle plays an important role in evaluating the product portfolio of a business (see GLOSSARY entries A.19, A.20). The need for new products arises as the business attempts to balance the products in the current portfolio that are in maturity and decline with new product entries that can eventually replace them.

The product life cycle can also be used as one criterion in evaluating new product concepts during **new product development** (see GLOSSARY entry C.17). New products that would be introduced into a mature market are less desirable than those that would enter a growth stage market. Mature markets face more entrenched competition, higher barriers to entry, and lower growth poten-

[12]Levitt, "Exploit the Product Life Cycle," pp. 87–94.

tial. In growth markets, by contrast, consumer loyalties are less settled, competitors less entrenched, and much of the market growth is still ahead. Even greater rewards are available for the new product that usurps an established market and starts a new product life cycle.

The product life cycle can also be used to guide the entry strategy for a **new product introduction** (see GLOSSARY entry C.18). The suggested marketing strategy elements outlined earlier for each life-cycle stage are also useful to the new product marketer in understanding the competitive strategies that the product will likely face and the strategy that the new product will need to develop to face them.

SUGGESTIONS FOR FURTHER READING

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