

Various Stages

Although most products follow such a cycle, their individual behavior differs widely. Consumer goods, especially certain fashion items, often have short life cycles that might skip a stage. For example, the hula-hoop craze of the early 1950s had a total of one summer's duration, exhibiting no introductory or mature stages. Other products, notably basic industrial goods, may experience a long life cycle in which maturity consists of a slow creeping growth in sales over time. The shape of the cycle curve also can be influenced by direct action. A firm may, for example, promote more frequent or varied usage among present users, or it may seek new users in new markets or through new applications of the basic material. Dupon's experience with nylon demonstrates the feasibility of all these strategies. In the absence of these efforts, nylon consumption would have reached a saturation level of 50 millions pounds of annual consumption by 1962. Instead, consumption in that year exceeded 500 million as the market for nylon expanded to tires, carpeting, clothing, and so on.

Discussion of life cycles typically has been limited to changing marketing characteristics. Yet many other aspects of the product or its manufacture also are subject to significant variations throughout the life cycle. Exhibit 21-1 summarizes how some critical product, production, and industry characteristics change over the cycle, among which the following stand out:

1. Early technology typically is unstable and untried. Changes are frequent, but technology stabilizes as product acceptance increases and the opportunities for product modification and innovation decrease. The near monopoly status and control over patents, which characterize the early period, also yield to greater diffusion of knowledge over time.
2. At the introductory stage production is carried out in small batches, employs multipurpose equipment, and is product centered. The competitive scramble that follows brings about search for lower manufacturing costs through value engineering, process innovations, longer production runs, and greater use of automation. Eventually, mass production techniques prevail.
3. The relative use of capital in the production process over time is related to the foregoing discussion. In the early stages, product-centered runs and the uncertainty attached to any manufacturing process argue for little investment in capital equipment. The situation is reversed, however, at the mass production stage.
4. Following the same reasoning, labor intensity is higher at the early stages, before any significant capital substitution takes place. However, the skill distribution of the labor force also varies substantially during the cycle. A high concentration of scientific and engineering personnel characterizes the manufacturing process for new products. In contrast, semiskilled and unskilled workers make up the majority of the diminished labor content involved in manufacturing each unit of the mature product.