

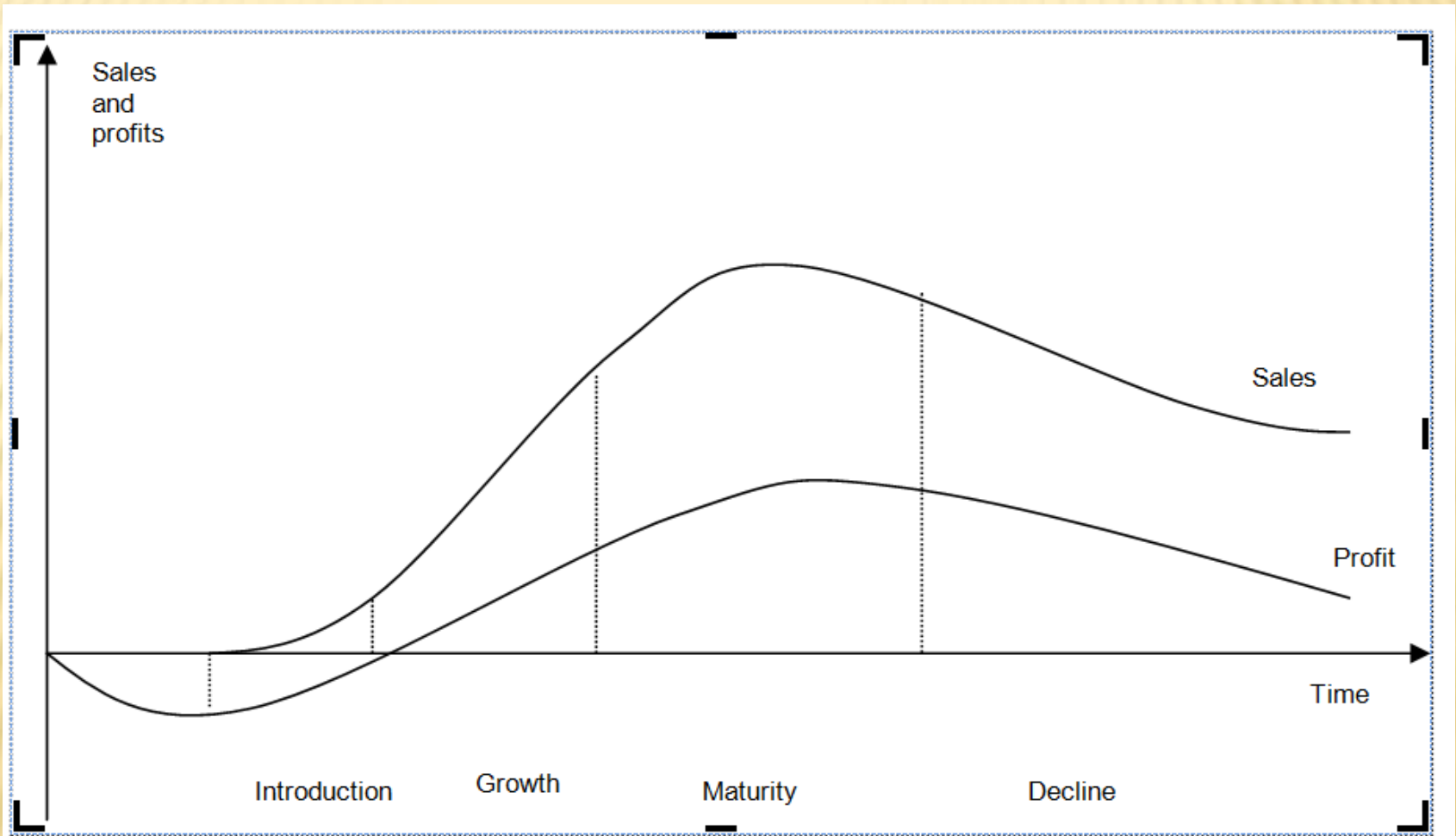
LIFE CYCLE COSTING

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PRODUCT LIFE CYCLE

- Often, this is termed as “cradle to grave costing” or “womb to tomb costing”.
- Typically or better phrase is “theoretically” a product is like human, having a life cycle – the same life cycle...”born, growing, matured and dying” and Life Cycle Costing means the accumulation of costs over a product’s entire life.
- Putting in a diagram form, a product life cycle should look like this:-

PRODUCT LIFE CYCLE (CONT'D)



PRODUCT LIFE CYCLE (CONT'D)

□ **Development Phase**

- Product is at research and development phase where costs are incurred but no revenue would be generated yet. At research stage, it is unsure whether “product” would materialize. It's only when research is not successful, the life cycle will not begin.

PRODUCT LIFE CYCLE (CONT'D)

□ Introduction Phase

- Demand is extremely low as customers are unaware yet about the existence of product/service.
- Advertisement and promotional activities are required to introduce customers regarding the existence of product.
- Company needs to sustain initial losses due to high investment including research and development costs and marketing expenses. Company may also sell at very low prices to penetrate into market! (Be careful, penetration strategy can only be adopted by big player!)

PRODUCT LIFE CYCLE (CONT'D)

□ Growth Phase

- Demand is now showing a steady and rapid increase.
- Costs per unit for product is expected to beginning to fall due to reduction in R&D expenditure and economies of scale (from greater production level).
- Objective at this stage is to gain and build market share.

PRODUCT LIFE CYCLE (CONT'D)

□ **Maturity Phase**

- Market is now filled by the product introduced at earlier phase. Company will expect sales to drop sooner when no actions are taken to maintain the market share.
- Another important factor now is to reduce demand elasticity as when demand is elastic, the only way to maintain market share is to keep reducing selling price. Differentiation is required!

PRODUCT LIFE CYCLE (CONT'D)

□ Decline / Saturation Phase

- Market reaches saturation point, product's sales curve begins to decline. Normally, price wars will erupt now as companies compete to maintain full utilization of their production capacity.
- Profit from this product is beginning to fall. Some companies may undertake innovation actions to boost the sales of the product (creating another life cycle) or others may opt to exit the game.

LIFE CYCLE COSTING

- Life cycle costing tracks and accumulates costs and revenues attributable to each product over the entire product life cycle.
- Life cycle costs would include:
 - Research & Development costs – design, testing, production process and equipment
 - The cost of purchasing any technical data required (e.g., purchasing the right from another organization to use a patent)
 - Training costs (including initial operator training and skills updating)
 - Production costs
 - Distribution costs - transportation and handling
 - Marketing costs - Customer service, field maintenance, brand promotion
 - Inventory costs (holding spare parts, warehousing and so on)
 - Retirement and disposal costs – costs incurred for the run down/support of product at end of product's life

LIFE CYCLE COSTING (CONT'D)

- Life Cycle Costing is based on the concept of product life cycle. It argues that the full cost of a product is the sum of costs at all stages (from development till decline) & not merely the Variable Production Cost & Fixed Production Cost at current production situation.

- Therefore:

$$\text{Cost per unit} = \frac{\text{Total costs over the life cycle}}{\text{Sales qty over the life cycle}}$$

LIFE CYCLE COSTING (CONT'D)

- Features that make life cycle costing important:
 - Non-production costs are high and usually not as visible as production costs. Using life-cycle costing will ensure these non-production costs are considered in the pricing process. (Indirectly to say – it increases the visibility of such non-production costs).
 - Product Research and Development usually involves long period of time. Therefore, a significant amount is incurred even before any production begins and before any revenues are received. In this connection, it is crucial for company to have a accurate set of revenue and cost prediction for the entire product life cycle in order to decide whether the company should commence the costly R&D and design activities.
 - Sometimes, costs may be incurred after the end of market life of a product, at the declining stage. Meanwhile, the profit [contribution] per unit will also be lower at this stage. Life-cycle costing ensures that these effects are considered earlier & the cost per unit is more acceptable.

ILLUSTRATION

- **Solaris** specializes in the manufactures of solar panels. It is planning to introduce a new slim line solar panel specially designed for small houses. Development of the new panel is to begin shortly and Solaris is in the process of determining the price of the panel. It expects the new product to have the following costs.

	Year 1	Year 2	Year 3	Year 4
Units manufactured and sold	2,000	15,000	20,000	5,000
	\$	\$	\$	\$
R&D costs	1,900,000	100,000	-	-
Marketing costs	100,000	75,000	50,000	10,000
Production cost per unit	500	450	400	450
Customer service costs per unit	50	40	40	40
Disposal of specialist equipment	-	-	-	300,000

ILLUSTRATION (CONT'D)

- The Marketing Director believes that customers will be prepared to pay \$500 for a solar panel but the Financial Director believes this will not cover all of the costs throughout the lifecycle.
- Required:
- Calculate the cost per unit looking at the whole life cycle and comment on the suggested price.

HOW TO MAXIMISE THE RETURNS?

Design costs out of products

- Between 70% to 90% of a product's life cycle costs are determined by decisions made early in the life cycle, at the design stage or development stage. Careful design of the product and manufacturing and other processes will keep cost to a minimum over the life cycle.

CONT'D

Minimise the time to market

- 'Time to market' is the time from the conception of the product to its introduction to the market. Competitors watch each other very carefully to determine what types of product their rivals are developing. If an organization is launching a new product it is vital to get it to the market place as soon as possible. This will give the product as long a period as possible without a rival in the market place, and affected by delay in its market introduction. It is not unusual for the product's overall profitability to fail by 25% if the launch is delayed by six months. This means that it is usually worthwhile incurring extra costs to keep the launch on schedule or to speed up the launch.

CONT'D

Minimise breakeven time (BET)

- A short BET is very important in keeping an organization liquid. The sooner the product is launched the quicker the research and development costs will be repaid, providing the organization with funds to develop further products. In life cycle costing, break even occurs when revenue from the product has covered all the costs incurred to date, including design and development costs.

CONT'D

Maximise the length of the life span

- Product life cycles are not predetermined; they can be influenced by the actions of management and competitors. For example some products lend themselves to a number of different uses; this is especially true of materials, such as plastic, PVC, nylon and other synthetic materials. The life cycle of these materials can be extended by finding new uses for them. The life cycle of the material is then a series of individual product curves nesting on top of each other as shown below.

SERVICE & PROJECT LIFE CYCLE

- Services have life cycles. The only differences with the life cycle of a product are that the **R & D stages** will not usually exist in the same way. The **different processes** that go to form the complete service are important, however, and consideration should be given in advance as to how to carry them out and arrange them so as to minimize cost.
- Products that take years to produce or come to fruition are usually called **projects**, and **discounted cash flow calculations** are invariably used to cost them over their life cycle in advance. The projects need to be **monitored** very carefully over their life to make sure that they **remain on schedule** and that **cost overruns** are not being incurred.

CUSTOMER LIFE CYCLE

- Customers also have life cycles, and an organization will wish to **maximize the return from a customer over their life cycle**. The aim is to **extend the life cycle of a particular customer** or decrease the 'churn' rate, as the Americans say. This means encouraging customer loyalty. For example, some supermarkets and other retail outlets issue **loyalty cards** that offer discounts to loyal customers who return to the shop and spend a certain amount with the organization. As existing customers tend to be more profitable than new ones they should be retained wherever possible.
- **Customers become more profitable over their life cycle**. The profit can go on increasing for a period of between approximately four and 20 years. For example, if you open a bank account, take out insurance or invest in a pension, the company involved has to set up the account, run checks and so on. The initial cost is high and the company will be keen to retain your business so that it can recoup this cost. Once customers get used to their supplier they tend to use them more frequently, and so there is a double benefit in holding on to customers.

BENEFITS

- There are a number of benefits associated with life cycle costing.
- It helps management to assess profitability over the full life of a product, which in turn helps management to decide whether to develop the product, or to continue making the product.
- It can be very useful for organizations that continually develop products with a relatively short life, where it may be possible to estimate sales volumes and prices can with reasonable accuracy.
- The life cycle concept results in earlier actions to generate more revenue or to lower costs than otherwise might be considered.
- Better decisions should follow from a more accurate and realistic assessment of revenues and costs, at least within a particular life cycle stage.
- It encourages longer-term thinking and forward planning, and may provide more useful information than traditional reports of historical costs and profits in each accounting period.