

# CHAPTER 7 - Strategic options generation

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# CHAPTER 7 - Strategic options generation

## 7.1 Introduction

The strategic options generation phase logically follows the strategic position analysis. If a gap is identified between where the organization wants to get to and where it will get to, if it continues with the current strategy, the strategic options phase is where the various options to close the gap can be considered. It is perhaps worth pausing to note that although this learning resource adopts a linear and rational approach to strategy development, elements of this phase will be thought of in the very first instance of starting a business. The basis of the competitive strategy is a decision that has almost certainly been made in the early life of an organization. It is, however, still important at various times to check that the strategy is always appropriate, given the environmental changes that have occurred since embarking on the original strategy.

Changing strategy is not something that can be done overnight and is often a marketing-led strategy. Customers will have positioned the organization's products and services in their minds against the competitor offerings, and it will take time for them to adjust. For example, at one time, Skoda Auto, a Czech based company, had a poor image in some parts of the world and was often the butt of jokes about being low in price and poor on quality. After a period of state ownership, it was purchased by Volkswagen in the year 2000 and became a wholly-owned subsidiary. Volkswagen ran a marketing campaign based on the slogan, "We've changed the car, can you change your mind?" It took a few years, but the Skoda Octavia and other cars in the portfolio have won the best car awards since then. Whether this is cost led or differentiation is difficult to tell from the outside. Still, the role of marketing to back up changes to the strategy is highlighted in that the differences must be communicated effectively to the customer.

Competitive strategies were covered in Chapter 6, and in this chapter, we cover options based on the strategic direction of growth put forward by Ansoff (1965), which are still valid today and the method of adoption. The competitive strategies in Chapter 6 and options in Chapter 7 follow a three-step approach illustrated in Figure 7. 1.

The accounting techniques of target costing (section 7.8) and life cycle costing (section 7.9) are discussed in detail due to their relevance to the new product development strategy. These are becoming more popular, particularly life cycle costing, as the awareness of the need to develop sustainable products that take account of the cost of recycling and the use of sustainable materials.

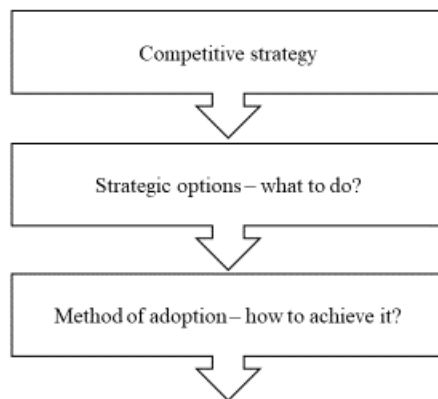


Figure 7.1 Three-step approach to strategic options

## 7.2 Learning outcomes

After studying this chapter, you will be able to:

- Identify and suggest a range of strategic options for an organization
- Critically evaluate the techniques of target costing and life cycle costing
- Discuss the different methods of achieving growth in an organization's activities
- Critically evaluate the contribution that management accounting can make to the generation of strategic options

## 7.3 Ansoff's growth vector matrix

**Active reading.** Note that the focus is on strategies for growth. The matrix is based on the two key aspects of strategy that an organization decides - products and markets.



**Video link** [Growth strategies adapted from Ansoff's matrix](https://www.youtube.com/watch?v=mXi9Ctzf6p4)

[<https://www.youtube.com/watch?v=mXi9Ctzf6p4>]

Ansoff (1965) identified four key strategies for growing an organization: market penetration, product development, market development, and diversification. These can be represented in a matrix, as shown in Figure 7.2. The matrix provides a useful framework for thinking about potential strategic options available to an organization. Figure 7.2 also includes two other options in the existing products and existing market quadrant of consolidation and withdrawal. These were not part of the original Ansoff matrix, but they do provide strategic options to the current strategy of the organization and can aid growth. Strategies can also consist of more than one element; for example, an organization may pursue a dual strategy of product development and market development. It is also possible to launch a new product or enter a new market using a strategy of market penetration; therefore, the strategies can be used in conjunction with one another.

		PRODUCTS	
		Existing	New
MARKETS	Existing	<ul style="list-style-type: none"> <li>• Consolidation</li> <li>• Market Penetration</li> <li>• Withdrawal</li> </ul>	<ul style="list-style-type: none"> <li>• Product Development</li> </ul>
	New	<ul style="list-style-type: none"> <li>• Market Development</li> </ul>	<ul style="list-style-type: none"> <li>• Related Diversification</li> <li>• Unrelated Diversification</li> </ul>

Figure 7.2 Growth strategies to fill the profits gap

## 7.4 Strategies for growth

**Active reading.** Note how the strategies described in this section build on knowledge gained from existing strategies.

### **7.4.1 Withdrawal**

Portfolio analysis was discussed in section 4.5, in which the possibility of withdrawing an existing product from the market was highlighted as an option. Withdrawing a product can be a way of releasing resources that can be diverted to more profitable products and therefore present itself as an option to support growth. Similarly, withdrawing from unprofitable markets can achieve the same objective of releasing valuable resources.

There are, however, considerations to withdrawing as the organization will have invested time and resources in developing products and markets, and the decision will not be taken lightly. There may be costs of withdrawing; for example, an automotive vehicle organization deciding to withdraw from the 4 x 4 market may involve closing a factory making the staff redundant. In some cases, there has been political pressure on the organization not to withdraw, or there could be adverse publicity that impacts the public perception of the brand. It may even be prudent to keep the product line in the market as its presence may encourage sales of other products in the portfolio. For example, an organization selling air conditioning units found that by selling basic units on which it made very small margins enabled the sales of other energy-saving heat exchange and ventilation systems on which it made a much better margin. The basic units became a loss leader product.

### **7.4.2 Market penetration**

Market penetration refers to the situation where an organization seeks to increase its market share in existing markets with the existing products, for example, through competitive pricing, advertising, sales promotion, and so on. The strategy seeks to secure dominance in growth markets. Models such as portfolio analysis (section 4.5) could be used to identify potential markets where this strategy might be appropriate to develop a question mark product into a star product. Market penetration strategies can also be used to force out competition from the market, leaving the organization with a dominant market share.

Typical strategies employ price and product awareness where a discounted price is offered coupled with aggressive marketing campaigns. The impact on margins needs to be considered here as there is a danger that if an aggressive pricing strategy is employed to achieve market dominance, it could reduce the overall profitability of the market as consumers become used to the lower price. Marketing devices employed to encourage brand loyalty, such as the introduction of loyalty cards and promotional activity, is also relevant, but again the cost of providing these needs to be understood.

### **7.4.3 Consolidation**

Consolidation refers to the situation where a company seeks to consolidate its position within a market by maintaining its market share. Customer loyalty programs are common techniques.

Focusing more effort on the profitable market segments determined via customer profitability analysis or on markets where a market-leading position can be maintained are common strategies that can be employed to consolidate the organization's position in the market.

#### 7.4.4 Product development

Product development refers to developing new products for existing customers. It is slightly riskier than concentrating on existing products and existing markets, as not all new products will be successful. The argument is that the organization should understand its customers and therefore be able to launch products that are attractive to existing markets. Ideally, they should be new products to profitable customers. It is also relatively important to keep a product base up to date via the development of the new product offerings, particularly if cash cows are reaching the end of their life. If this is maintained as a long-term strategy, it requires constant investment. The technology industries such as mobile phones are one in which new products are launched at regular intervals, with marketing campaigns to persuade customers to upgrade.

#### 7.4.5 Market development

Market development refers to the strategy of entering new markets with existing products and is also riskier than market penetration and consolidation as the products may not sell well in new markets. It can include new geographical areas and new channels to market, such as selling via the Internet or TV shopping channels. The classic example is expanding sales into overseas markets, which raises cultural issues and may require some adjustment to the product offering with an associated impact on costs, pricing, and profitability.

### 7.5 Evaluating viable international markets

**Active reading.** Note the use of a strategic framework to provide the basis of considering suitable targets for overseas expansion. Note the elements that need to be considered under each heading of the framework discussed in section 7.5.2.



**Video link** [Porter's competitive advantage of nations \(Porter's diamond\)](https://www.youtube.com/watch?v=4LxwaBikP6o&t=26s)

<https://www.youtube.com/watch?v=4LxwaBikP6o&t=26s>

There are three critical decisions to make when considering expanding into international markets. Firstly, whether to market abroad at all? Secondly, which markets to enter? And finally, which mode of entry is the most appropriate at the time?

### **7.5.1 Whether to market abroad.**

Opportunities to expand into international markets may be identified from the environmental analysis. The advantages include expanding sales and potential profits, lengthening the life cycle by selling into new markets, and spread the risk, both geographically and economically. There may be seasonal aspects that can be exploited, for example, products that are enjoyed in summer months can be sold in different countries depending on when their seasons occur. Operating in different countries can reduce the risk of economic cycles, for example, economies may do well at different times, and the risk exposure to political influences could be mitigated by operating in several markets.

There are, however, drawbacks in that the further away from the domestic market, the more difficult it is to control. The issue of control can be addressed via the market entry mode. There is a cost associated with the expansion, and considerable investment may be required, again depending on the entry mode adopted. There may be elements of the product or service that need adapting to make it acceptable in overseas markets, for example, cultural or legal reasons. The legal aspects need careful research as regulations will differ between markets.

In some cases, there may be cost advantages, for example, the safety requirements of an automotive vehicle sold into India are less stringent, and hence less costly, than the one sold into European markets. This sets up an ethical issue as to whether local standards are adopted, or a higher organization-wide standard is applied based on the most stringent standards to which the product must be made in the markets it serves. Using a higher standard could put the organization at a cost disadvantage to competitors that adopt the local standard in each location.

### **7.5.2 Which markets to enter?**

It would be advisable to undertake an environmental analysis concerning the potential overseas markets. One aspect would be the attractiveness of the overseas market and whether the organization would have any possible competitive advantage over the existing competition.

Porter (1990) proposed a framework for analyzing the competitive advantage of nations to explain why some nations have a global competitive advantage in certain industries. The elements of the model that Porter identified can be used to aid the evaluation of a potential country for expansion.

#### **Factor conditions**

When expanding overseas, the degree to which the basic factors (land, labor, and capital) and advanced factors (technology, education, and infrastructure) are required need to be assessed. The basic idea behind Porter's theory is that a nation that has an abundance of basic and advanced factors will be more competitive than a nation that has not. It has echoes of comparative advantage

in that a country that has access to cheap labor will potentially have a comparative advantage in labor-intensive goods. In contrast, a country that has access to capital and technology will likely have an advantage in capital intensive goods.

The mode of entry and degree to which operations are established, for example, export or local manufacture, will again influence the local need for these basic and advanced factors. Still, an assessment must be made as to the extent to which the factors need to be present. For example, is a skilled workforce required? It may be that labor does not need to be highly skilled and is plentiful and inexpensive, and establishing manufacturing facilities in a certain country to access the less expensive labor is advantageous. It is, however, important to note that a presence of factors does not guarantee success; it is how they are deployed that matters.

### **Demand conditions**

The demand conditions in the overseas market need to be reviewed. For example, how sophisticated and demanding are consumers? What are the demographics? An educated workforce from the factor conditions analysis also implies an educated consumer. Ideally, if there are segments of the market that have the same characteristics of the domestic or home market, it means that the organization may understand how the market will respond to its products. Is the market growing or mature? Cultural issues need to be considered, and any adaptations to the product or service ascertained and costed. The degree to which alternative products exist within the market and the price ranges of competitor products needs to be researched.

### **Firm structure, strategy, and rivalry**

The structure of the industry, degree of competition, and capital markets all need to be considered. How competitive is the industry? Are there influential domestic organizations? Are other international organizations already operating in the market? What is the political climate like for foreign investors? Is foreign direct investment encouraged or restricted? Are there any legal barriers?

### **Related and supporting industries**

To what extent are supporting industries, for example, distribution, raw material/component suppliers, maintenance, and complementary products and services required and available?

Although it was not the original rationale for Porter's analysis, the framework can be used to assess the desirability of expanding into overseas markets and comparing the suitability of different countries.



### 7.5.3 Mode of entry

**Active reading.** Think of how the accountant can contribute to an evaluation of each mode of entry.

The mode of entry is significant as the degree of investment required increases as the mode of entry becomes more embedded within the overseas location. Ohmae (1990) suggested that a move towards globalization can be achieved by stages, and this framework provides options for market entry. The first step in overseas expansion is usually exporting. This can be achieved by the organization selling directly to customers, or via an overseas agent. Understanding demand conditions is a critical factor in deciding whether exporting is a potential opportunity. The next step might be to open a sales office in the country. If the market proves to be extremely promising, production often follows the sales. In cases where establishing a production capability in the country is being considered, the availability of basic and advanced factors needs to be evaluated.

The costs of progression and the viability of the options are an area where the accountant is well placed to support the strategic decision. Following overseas production Ohmae suggests that a fully functional organization can be established in a foreign country. He terms this insiderization, and the company is, in effect, a multinational company, in that it operates in more than one country. The difference between a multinational and global company is that a multinational company would still recognize a domestic market; for example, it is a U.S. company that also has operations in several overseas markets. A truly global company, however, does not recognize a domestic market as it takes a world view. The maxim “think global, act local” still holds true as the global company tries to integrate learning, skills, and competencies to achieve global efficiency while retaining responsiveness to local markets.

The method of entry can also include acquisition and merger as well as the organic growth option. These are discussed in section 7.10.

**Learning activity.** Think of other frameworks discussed in Chapter 3 that could be used to understand the business environment and market forces operating in the industry. Apply these and elements of Porter’s theory of competitive nations to create a list of criteria that would be considered by an automotive manufacturer thinking of expanding into a new international market.

## 7.6 Diversification

**Active reading.** Note the benefits and drawbacks of diversification and why diversification might be reducing in popularity as a strategy.

Diversification is essentially selling new products into new markets and represents the option with the highest risk to the company. Diversification may be a suitable strategy if existing markets are becoming extremely competitive or are changing rapidly; thus, it may help to spread the risk for the organization. Diversification can be subdivided into related and unrelated. Related diversification has some relationship to existing activities, whereas unrelated diversification is something completely new, and can represent a higher risk.

Related diversification involves either vertical or horizontal diversification as illustrated in Figure 7.3.

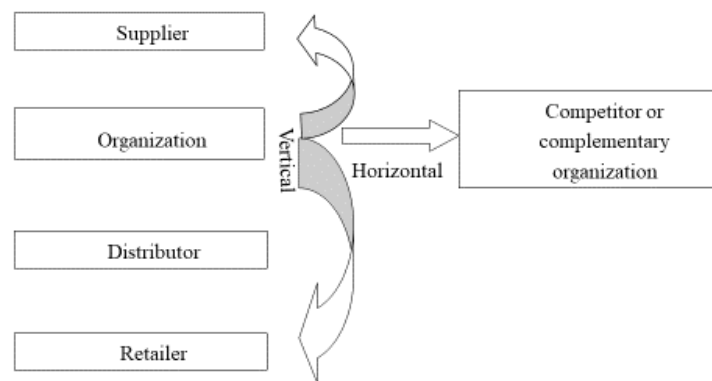


Figure 7.3 Vertical and horizontal diversification

Diversifying backward or forwards through the supply chain can have strategic advantages in that it guarantees surety of quality suppliers or closer links with customers. It can reduce the incidence of buyer or supplier power, release the margin within the supply chain to the organization, and can lead to higher profits. It could also raise barriers to entry, making it more difficult for competitors to compete. However, it can lock in more fixed costs, thus increasing the operating gearing (the proportion of total costs that are fixed) of the organization, making it more vulnerable to fluctuations in end demand. The strategy is also reliant on economies of scale being realized, and it takes the organization away from its core competencies and into areas where senior managers may not have the knowledge or expertise to manage two or more diverse businesses effectively.

Horizontal integration seeks to take advantage of economies of scale, or technical and technological competencies. Both forms of related diversification would involve exploiting synergies, the  $2 + 2 = 5$  effects of working together. These synergies could take the form of

marketing synergies, such as making use of common distribution channels, sales staff, and warehousing. Operating synergies such as central purchasing, administration, technical support, or shared facilities. Investment synergies such as the ability to raise finance from an increased asset base, or the transfer of research and development between product ranges. Management synergies, mostly relevant to horizontal diversification, where skills and expertise can be transferred and rationalized.

Unrelated diversification, often by merger and acquisition, has been a popular strategy in the past but has fallen out of favor more recently, where the trend is to stick to the core competencies. There are advantages of unrelated diversification, such as spreading the risk, increasing profitability, gaining access to capital and resources, and enhancing the image of the organization and reputation of the senior managers (although this is a not good reason on its own to diversify). There have been examples of senior managers pursuing diversification strategies for the wrong reasons, and it comes with a high degree of risk as there is often a lack of shared identity and purpose between the organizations as the term “unrelated” implies. There is also an argument that investors could diversify their investment portfolio, and managers should not try and do this for them.

The emergence of the concept of the business ecosystem, lean manufacturing, value creation through the supply chain, collaborative working, and other strategic mechanisms for working closely with other organizations has led to the suggestion that there is often no additional benefit to be gained by trying to undertake all activities in the supply chain, that is being entirely vertically integrated, or by diversifying into other areas and away from the core competencies of the organization.

## 7.7 A mix of strategic options for growth

**Active reading.** Note how BT adopted a mix of growth strategies to its overall strategy. The options are not mutually exclusive.

In the mid-1980s, British Telecom (BT) enjoyed a near-monopoly position in the infrastructure telecoms market in the U.K. The industry regulator decided to change this situation as it was deemed to be anticompetitive. However, BT found that the domestic market was mature and growing very slowly, if at all. However, at the same time, there was increasing deregulation in other areas of the world, and markets such as Africa and Asia were showing signs of steady growth.

The senior management of BT was looking to diversify its interests into media and develop new products that could be offered via the provision of superfast broadband. As a strategy, they sought to consolidate their position in their domestic market for telecoms provision while using an approach of market penetration to target expansion in the growing overseas markets. A BT Sports TV channel was launched with the acquisition of rights to broadcast premier sporting events. The

management adopted several of the strategies outlined in this section to develop an overall strategy enough to close the profits gap.

The role of management accounting in evaluating strategic options is discussed in Chapter 8. It focuses on the financial evaluation of the options as investment opportunities and the forecasting of likely outcomes. There are, however, two techniques that are particularly useful in the development of new products. These are target costing and life cycle costing, which are discussed in detail in the next two sections.

## 7.8 Target costing

**Active reading.** As you read through this section on target costing, note how the target cost is arrived at and note the customer focus. Note also how it is an inclusive process of everyone in the organization, it is not just the design, but all functions that can contribute to achieving the target cost. You will notice the mention of other accounting techniques that supplement the target cost analysis, and when reading the benefits and drawbacks, think of the practical implications of adopting target costing as a regular practice within the organization.



**Video link** [Target costing](https://www.youtube.com/watch?v=HStm4f0sqpc)

[\[https://www.youtube.com/watch?v=HStm4f0sqpc\]](https://www.youtube.com/watch?v=HStm4f0sqpc)

Target costing is said to have been developed by Toyota in the 1960s. The practice soon spread to the whole of the Japanese automotive industry (Tanaka, 1993), and by the 1990s had been adopted by 80% of Japanese manufacturing organizations (Karoli, 1997). The adoption rate in other countries was much slower. There is evidence that Ford was using the principles of target costing in the early 1990s (Shank and Fisher, 1999) and it has since become more widespread in other organizations and countries (see, for example, Dekker and Smidt, 2003; Helms et al., 2005; Yazdifar and Askarany, 2012).

Target costing is often viewed as a technique for use in manufacturing, rather than service organizations; however, Yazdifar and Askarany (2012) note that service organizations are also finding the technique useful. Target costing uses a market-based approach to pricing to derive an allowable cost for new products, as opposed to calculating the selling price by adding a mark-up on cost. This makes cost an input to the product development process, rather than an output (Cooper and Slagmulder, 1999a).

Hiramoto (1991) suggests that the market-based approach to pricing is highly relevant in a competitive market, and that management accountants can help to motivate a market-driven behavior by working as part of the team to derive an allowable market cost, and to ensure the

continued profitability of the organization. Due to its market-based approach, recognition of the customer perspective, and forward-looking orientation, it is often included among the techniques described as strategic management accounting.

### **7.8.1 What is target costing?**

The target cost is derived by deducting the profit margin from the market selling price, that is,  $\text{target cost} = \text{selling price} - \text{expected profit margin}$ . Kato (1993: 33) states that “target costing is not a costing system as such; rather it is an activity which is aimed at reducing the life cycle costs of new products while ensuring quality, reliability, and other customer requirements, by examining all ideas for cost reduction at the product planning, research, and development process.”

As the definition suggests, it is the early stages of the new product development process where the technique is said to be the most useful. It should not, however, preclude the principal elements of the technique from being used to reduce costs of existing products, or of the downstream activities of delivery and customer service. Ansari and Bell (1997) place the focus of target costing as being a means of managing the organization’s future profits. It provides a system for integrating strategic variables to plan how to satisfy customers, capture market share, plan, and control costs, and hence, generate future profits.

The main reason why the technique is focused on the early stages of the new product development process is that, in most cases, 80% of the costs are determined at the design stage. It is easier, and cheaper, to manage the costs during the early stages of product development (Ulrich and Eppinger, 2000) than to make changes after the product is introduced, which can often be quite costly (Cokins, 2002).

### **7.8.2 Where is target costing appropriate?**

Target costing is becoming more relevant today due to the shorter product life cycles and increasing product diversity required to satisfy increasingly sophisticated consumer markets (Gagne and Discenza, 1995). Dekker and Smidt (2003) identified in their study of Dutch firms that it was used more by assembling firms, and those organizations that operated within a competitive and unpredictable environment. Hibbets et al. (2003) suggested that it is more likely to be used by firms following a differentiation strategy, where functionality may be more significant, and there is intense rivalry among organizations. The argument here is that an organization following a cost leadership strategy would be trying to reduce costs continuously. Therefore, as the product is only designed to fulfill its primary purpose, rather than being loaded with functionality, the organization is targeting those customers that just require the basic product. It could equally be argued, however, that even the cost leader would find techniques such as value engineering and functional cost analysis useful in helping to reduce costs, making the principles of target costing appropriate for all organizations.

Davila and Wouters (2004) suggested that target costing is less useful where technology, time-to-market, or very demanding customers are important to a product's success. However, there is evidence that suggests that using target costing can reduce time-to-market (Afonso et al., 2008) if the concept becomes part of the culture of the organization, and customer demands can be met more profitably via target costing methods, no matter how demanding the customer.

The principles of target costing should be applied to all product developments and increases in functionality as it moves through the product life cycle. Adding new features should be subject to the same process as the initial product. For example, the mobile phone was initially developed to make phone calls, and later to send text messages. As the technology developed and the Smartphone (a new product development) became the norm, additional features were added, such that Smartphones are now marketed and purchased because of the quality of the camera and ease of use, and the functionality of the phone call is now incidental to the product. The look, feel, and ease of use have become key value drivers for the customer. The mobile phone also serves to illustrate the complexity of the markets and interlinkages between product and service elements, as digital coverage, and signal strength provided by competing networks also impacts on the mobile phone market. At each stage of the product development, there is potentially a ceiling where customers view the products as too expensive; therefore, the market price sets the ceiling and, by deducting an expected margin, sets the target cost for the enhancement.

The example in Figure 7.4 illustrates how a target cost involves all functions and not just the manufacturing element.

Table 7.4 Analysis of cost before and after applying target costing

Projected lifetime sales volume	500,000 units
Target selling price	\$750
Target profit margin of 30%	\$225
Target cost	\$525
Current project cost	\$650
Saving required	\$125

Table 7.4 continued

Cost breakdown	Current estimate	After review	Action to reduce cost
	\$	\$	
Manufacturing cost			
Direct materials (components)	350	330	Negotiation with suppliers
Direct labor	100	60	Use of workstation assembly in place of sequential line assembly
Direct machining costs	25	20	Redesign of functionality reduced requirement for machine tool work
Ordering and goods handling costs	15	10	Review of inventory and supply chain management
Quality control	30	15	Improved assembly means can move to statistical sampling
Rework costs	50	10	Assembly process and additional training
Pre-production costs - design and development	15	10	Use of computer-aided design speeded up re-design of product features
	585	455	
Marketing and sales costs	30	25	Review of marketing campaign and marketing communications strategy
Distribution costs	10	8	Review of distribution channels
After-sales service and warranty costs	10	5	Improved quality process should reduce warranty costs
Recycling costs	15	12	Redesigned functionality makes recycling easier to achieve
Total cost	650	505	

### 7.8.3 The process of target costing

There is no one definitive series of steps to undertake the activity of target costing. There are elements where an iterative approach is appropriate, and aspects can be conducted simultaneously, rather than sequentially. The following steps are indicative of the process.

- (1) Re-orient culture and attitudes towards a market-based approach
- (2) Establish a market-driven target price
- (3) Determine the required profit
- (4) Determine the target cost
- (5) Establish a multidisciplinary team to undertake the exercise

- (6) Establish an initial cost estimate via a product cost model
- (7) First look at ideas to reduce cost – generate ideas and evaluate alternatives
- (8) Use tools to reduce costs such as value engineering and functional cost analysis
- (9) Reduce indirect costs
- (10) Undertake overall net present value analysis over the estimated life of the product or reasonable period
- (11) Ensure a cost management system in place to monitor ongoing costs and take corrective action where necessary.
- (12) Feedback for organizational learning.

#### 1. Re-orient culture and attitudes towards a market-based approach

Target costing requires a market orientation, and this may need a change in the organizational mindset to enable the customer focus to take precedence. Implementing target costing may well entail a shift in culture (Crow, 1999) as employees need to be empowered and motivated to find innovative solutions to reduce costs without losing the required functionality of the product or compromising on quality. Monden (1995) suggests that an objective is not just to reduce costs of a new product, but to motivate all employees to seek ways of managing costs continually, or, as Ansari and Bell (1997) noted, a way of managing future profits. Kato (1993: 43) notes that a characteristic of Japanese management processes is that it “combines a human intelligence for effective thinking and technological innovation to make daily operations efficient.”

#### 2. Establish a market-driven target price

Ascertaining the market price of the product is the responsibility of the marketing department. Target costing is about maximizing profit over the product life cycle (Cokins, 2002). Therefore, factors that need to be considered include the impact on the price of the product concept itself; the characteristics of the target market; the anticipated product life cycle; expected sales volumes, as this will impact on production costs; sales price adjustments as the life cycle progresses; competitor pricing, if similar products already exist; and any dealer incentives. Pricing strategy and objectives also need to be considered throughout the product life cycle, such as, whether an initial profit-maximizing objective is to be employed to skim profit off the market before competitor offerings appear, or a volume maximizing objective, which will lead to a lower price being employed.

If the product is at the forefront of technological design, other theories, such as the diffusion of innovation, may come into play. For example, the electric vehicle, which is in the early stages of the product life cycle, is probably being purchased by the innovators and moving towards early adopters. The theory of diffusion of innovation suggests that the population adopts new technology in a specified pattern – innovators are the first to purchase the product (who represent 2.5% of the market), early adopters (13.5%), next, the early majority purchase (34%), followed by the late majority (34%), and finally laggards (16%).



The volume aspect of the life cycle is significant for manufacturing costs, as these may become lower as the product progresses through the life cycle, due to learning curve effects, or economies of scale, as the volume increases. This may mean that the target cost is only achieved at a given volume, and early sales incur losses, requiring continued additional investments before the product eventually breaks even and begins to enter the profitable stage of the life cycle. There is an obvious risk involved here in that it may take longer than anticipated to reach the required volumes, or that they may never be reached. Plus, if the product grows successfully, competitors will undoubtedly enter the market. Therefore, if the whole of the life cycle is to be considered, it requires a forecast to be made of the pattern of future demand, and the likely response of competitors. Data from existing products and past market information can be used to help forecast the likely pattern of future demand for new products, and building up competitor response profiles will help to anticipate the potential response of competitors.

The marketing department also needs to consider the use of *pricing by function* (Kato, 1993) or *customer value-oriented product pricing* (Bock and Pütz, 2017). It feeds into the functional cost analysis used later in the process to identify where cost reductions can be made without destroying the value to the customer. Data on customer needs can be gathered from a range of sources, such as market research, reviewing competitors' products, specific requests from customers, using a form of idea generation, such as brainstorming sessions, the formation of creative teams, and employee suggestion schemes.

It is essential to realize that establishing demand is more than just identifying what the customer wants, as there is a difference between the customer need (a basic need for social interaction), and the want (such as a mobile phone with a specific functionality). Demand is the want, coupled with the ability to pay. Many people may want, or desire, the prestige of an expensive car, but not everyone can afford to buy one. The skill, therefore, is estimating how many people are likely to buy a product and the pattern of demand over the life of the product – this is where experience counts.

In practice due to the potential complexity of the sales price variations that may occur over a product's life, some of which may not be anticipated at the outset but made as a competitive response in the growth or mature stage of the life cycle, a price is established that represents a competitive price that the product will be sold at during the mature stage of the product's life. It is the price that the product will settle at in a competitive market. It may be that the early price at which the product is introduced may be slightly higher.

The performance of existing and past products can be an important factor in determining a pricing strategy. Hence, organizations need to ensure that they employ data collection systems that are capable of collecting data on sales volumes, pricing and costs over some time, and the ability to integrate the system to determine trends, and what works, and what did not. Target costing is most effective when the organization has access to good data.

### 3. Determine the required profit

Each product or service that an organization sells contributes to the overall profit achieved. Therefore, it is not just a case of taking a broad approach to setting a profit target of 10% for all products. Not all products necessarily make the same contribution to overall profit. The profit associated with a product must be determined in relation to the overall strategy of the firm. Existing products can provide a reference point for assessing the profit potential of new products. Still, senior managers need to be aware of managing a portfolio of products and a portfolio of customers, so profit targets need to be set by the people in the organization who are aware of the overall strategy.

Information systems play a key role in setting profit targets, as profits are affected by indirect manufacturing and general overhead costs, as well as direct product costs. Therefore, costing systems that are capable of allocating costs to products on a reasonable and fair basis, such as activity-based costing, can significantly assist the process of target costing. Tani et al. (1994) found that over 80% of firms in their survey indicated that overheads and depreciation on new investments were included within the target costs. Cooper and Slagmulder (1997) also suggest that final target costs should include indirect manufacturing costs.

A few authors have suggested that it should also take account of financing costs. Indeed Kee (2010) provides a numerical example where target costing that ignores the finance cost can lead an organization into making an incorrect decision about the long-term viability of a new product. Kee demonstrates that undertaking a net present value calculation can indicate that the product is not viable, even if the target cost is achieved. The examples, however, do depend on the level of investment required to produce new products. It is, therefore, important that the level at which profit targets are set is fully understood as this will impact on the costs that are included in the analysis. For example, is it a target profit expressed as a contribution, or a target return on investment? In practice, the profit expected is after deducting all costs incurred up to the point when the product is ready for sale.

#### 4. Determine the target cost

The target cost equals the selling price, minus the required profit margin. This calculation provides the allowable, or target cost. Cooper and Slagmulder (1999) determined a cardinal rule that the target cost should never be exceeded. In theory, if the target cost cannot be achieved, then the product should not be approved. However, the target cost can be broken down into setting allowable cost targets at the component level. Therefore, if this rule is applied throughout the process, it ensures that making changes to smaller component elements of the overall design does not create a situation where the total target cost is exceeded.

The marketing research conducted around the product concept, functionality, and price acceptable to the consumer indicates the market cost drivers. This provides information about the importance of various functionality and hence identifies sensitive areas where the balance between functionality and cost needs to be carefully managed. They are referred to as market cost drivers as it defines the functionality required by the market.

The use of functional cost analysis can then be used to identify the target or allowable costs for functions, and the components required to provide that function. Where bought-in components are used, it is essential to involve suppliers as early as possible (Ellram, 2000), and to develop a close working relationship, as achieving cost savings in this area requires their cooperation. A challenge of working with suppliers and outsourcing elements of the production process is determining the exact specification and expectations of performance from the suppliers. This has links to the concept of total quality management and ensuring that there are systems in place to monitor suppliers, not just in terms of cost, but also in terms of performance (Natovich, 2003; Quélin and Duhamel, 2003).

5. Establish a multidisciplinary team to undertake the exercise

Target costing, and particularly functional cost analysis, which is part of the process of achieving the target cost, should ideally involve a group of employees drawn from different departments such as marketing, design, production engineering, purchasing, and accounting (Gagne and Discenza, 1995). The members of the team should work together to understand the interplay and trade-offs between costs and functionality, and consequently, while a broad background of experience is desirable, there may be some training involved to make the team operate effectively. In large organizations, this is often a permanent team within the organization; indeed, there could be several teams working on different product developments at the same time. In smaller organizations, it may be a team pulled together for specific projects, but the critical factor is having the right mix of skills, and their ability to make decisions. This team approach needs to feed into a process of organizational learning so that future projects benefit from the experience gained and lessons learned from previous successes and failures.

6. Establish an initial cost estimate via a product cost model

The initial product cost is established by creating a detailed breakdown of the manufacturing cost, including materials, labor, and manufacturing overheads. It is useful to include within the model the anticipated volumes and demand forecast profile over the life cycle of the product, or at least over an extended period. This forecast enables the analysis to account for factors such as a reduction in manufacturing cost due to learning curve effects, economies of scale, and any anticipated changes in costs.

The model should include all costs that can be managed in respect of the product. Techniques such as activity-based costing can be used to help ascertain the indirect costs. Inventory related costs and distribution costs should be included as these costs can be managed to reach the desired profit level. If new investment is required, and a time profile is prepared, the cost of financing can be included by developing the model into a net present value calculation. A proper costing system is required so that the cost estimates can be made as accurately as possible, bearing in mind that the accounting policies, such as the method of calculating depreciation rates, and the availability of information, can impact on the costs when assigned to products.

#### 7. First look at ideas to reduce cost – generate ideas and evaluate alternatives

If the initial cost exceeds the allowable cost, then ideas are generated to reduce the cost. The cost should include all costs associated with the product. In attempting to reduce costs, the basic concept of target costing should not be forgotten, that is, the customer view of functionality and quality of the product is paramount, so any reduction in costs should not impact on the customer perception of the product. The objective is to make reductions in cost without changing the value of the product in the eyes of the customer.

#### 8. Use tools to reduce costs such as value engineering and functional cost analysis

##### *Value engineering*

The basic concept of value engineering (VE) involves designing a product at a lower cost by reviewing the functions needed by customers. Park (1999) suggests that VE includes the following main tasks:

- 1) Identifying the relevant function of the product or service
- 2) Establishing a monetary value for identified functions
- 3) Providing the required functions at the lowest cost

There are several aspects to value. For example, *cost value* is, as the name suggests, the cost of the function or product. *Exchange value* is how much the customer is prepared to pay for the product. *Use value* is the purpose the product fulfills, that is, when the product can be, and is, used for the purpose for which it was intended, for example, a chair has use value in that you can sit on it. A customer that merely wants something to sit on may not be looking for high quality, handmade leather chair. *Esteem value* is related to the prestige that the customer places on the ownership of the product. For example, a customer may be looking for high-quality furniture, not just because it serves a use, but also because it has a prestige value of owning high quality, luxury, and, therefore, possibly expensive furniture. These different aspects of value highlight the significance of determining the target market before undertaking value analysis, as different consumers will place a different value on elements of a product depending on how they view it.

Value engineering can be broken into stages. Ibusuki and Kaminski (2007) highlight three levels that focus on the product concept, the design phase, and the production phase. The product concept phase involves a *zero look*. A zero look considers new concepts and new functionalities that do not currently exist. *First look* is concerned with the product design stages and primarily seeks to develop new products from existing concepts. The first look identifies the main areas to target for a reduction of costs. It can include using existing products as a reference point to look for improvements. *Second look* picks up at the later design stages, detailed component design, and moves into the production stage. Teardown analysis can also be used to facilitate the understanding of functionality and costs if competitor products exist. The teardown is a process of taking a

competitor's product to pieces to understand how it is designed and manufactured and is part of competitor analysis.

Value engineering techniques often include the use of checklists of functionalities along with their associated costs. It is not, however, a process of merely choosing functions from a list and deleting those that save money. The functionality required by the customer needs to be considered, as well as the knock-on effects of one function on another within the overall design, and the potential impact on quality.

### *Functional cost analysis*

Functional cost analysis, as the name suggests, is the process of mapping the functions of the product broken down into components and assigning the cost to each element. The function is described in terms of verbs, that is, what activity or function is it that the product or the component needs to perform? This is then linked to the actual physical elements of the product. For example, in a household water tap, the basic function is to allow the free flow of water as and when desired. Several components make up the tap. Each element performs a specific role within the design and has a cost attached to it. This could be materials and labor. If components are bought-in, the suppliers also need to be involved in the process. The parts are then assembled, packaged, stored, delivered, marketed, and sold to customers.

A table can be used that identifies the following elements: the functions, the parts, and the costs (materials, labor, and indirect costs that can be assigned using a technique such as activity-based costing). This breakdown forms the basis of a cost table that can be prepared with the help of the accountants. The marketing department will also have some input as certain elements will provide much more value to the customer than others. For example, those parts that are purely functional, that is, they have to be there to make the product work, may not be seen as a key selling point to the customer, but what customers value is the look, style, and finish of the product. Therefore, the handle design may have much more significance for the customer than the tap spindle, but the tap will not work without a spindle. This does not necessarily mean that the components can be made from lower quality and hence less costly material, as this may affect the reliability of the product, which may be a factor valued by the customer.

This example illustrates that some of the functionality required by the customer is subjective. For example, mobile phones include a camera. Still, the ease of use and handling the device when taking selfies are just as significant as the physical attributes and functions of the camera. Techniques such as functional cost analysis and value engineering enable a better understanding and consideration of the trade-off between product function and cost (Iranmanesh and Thomson, 2008). For example, the question would be, can the product be made from different materials that provide the desired reliability and quality?

The relative importance of various functions and attributes to the customer can be assigned based on a value 1 – 10 with 1 being not required, to 10 being of extreme importance. Or more loosely, it could be based on a simple scale of not needed, nice to have, or essential.

The difficulty of understanding how components add value and contribute to the whole cannot be underestimated. Imagine how many parts there are in an Airbus A380. There are several thousand engineers involved in the design, so it can be a significant project undertaking and requires appropriate project management skills and leadership as well as the technical skills and knowledge. Pronin et al. (2004) highlighted how engineers often overestimate the importance of their component or overdesign it to demonstrate their competence in design (Siemsen, 2008).

Overdesign can also occur through risk aversion or believing that the component must perform under extreme situations. This emphasizes the need to engender a team approach to value engineering and functional cost analysis, and to include review and critique sessions to guard against overdesign, but also to ensure that cost savings do not impact on the required functionality, reliability and quality of the product.

#### 9. Reduce indirect costs

There may be scope to reduce the indirect costs that help to achieve the target cost. Techniques such as just-in-time management of inventory, production patterns, and improving the efficiency and effectiveness of activities such as machine set-up, maintenance, and so on, can provide cost savings. Nor should we ignore the concept of continuous improvement (Ellram, 2000), which can provide significant benefits in achieving the target cost through the life cycle as well as increasing the cost accountability of all those involved.

#### 10. Undertake overall net present value analysis over the estimated life of the product or reasonable period

Where a significant investment is required to produce the new product or further investments to meet capacity requirements as the product grows, it is useful to undertake a net present value (NPV) calculation feeding in the cost estimates and demand profile. This financial evaluation then takes account of the cost of capital and provides additional comfort that the product is viable in the long term. It is always worth remembering that the NPV calculation will include estimates, and sensitivity analysis should be undertaken to establish acceptable levels of error in the forecasts for the future years.

#### 11. Ensure a cost management system in place to monitor ongoing costs and take corrective action where necessary.

Target costing requires a sound cost management system for monitoring the costs and taking corrective action in the future. The database of costs can be developed and improved over time as experience is gained from using the technique. This stage should also include supplier evaluation and the continuous monitoring of supplier performance to ensure that costs are managed throughout the whole value system.

#### 12. Feedback for organizational learning.

Not all new product launches are successful, and not all estimates will be accurate. The experience of target costing exercises needs to be fed back into future products so that the process can be continuously improved.

#### **7.8.4 Benefits of target costing**

The increasing competitiveness of many markets today means that customers are always demanding new products, with better quality and functionality, without an increase in price (Roy et al., 2005); therefore, a program of new product development is becoming a vital requirement of a successful manufacturing organization.

Target costing means that an organization needs to take a proactive approach to cost management and to understand the cost drivers. It helps to understand the trade-off between the cost and functionality of a product (Iranmanesh and Thomson, 2008).

The organization becomes much more customer-focused as, rather than developing products in an internal vacuum, the customer needs are considered, and a product designed to satisfy those needs at a price and cost acceptable to the consumer and organization. Indeed, it could be said to be acceptable to all stakeholders, as suppliers will earn a satisfactory profit, employees will be motivated with job security assured, and the shareholders receive an adequate return.

Target costing ensures the needs of the supply chain are considered. Helms et al. (2005) note that the days of squeezing suppliers for immediate cost savings are losing credibility and is not a good way to foster successful working relationships. The whole supply chain needs to be involved (Cooper and Slagmulder, 1999b). However, the issue of supplier power and buyer power may come into play and the relative negotiating positions of the parties involved.

Manufacturers of products must have the needs of the retailers in mind when designing new products. For example, shelf space occupied, ease of handling and so on, can all impact on a retailer's willingness to stock the product, and as such, adopting target costing enables an organization to consider not just the needs of the end consumer, but also the needs of the whole supply chain. The increasing awareness of sustainability issues has emphasized the need for organizations to work together through the development of new materials, packaging designs, and recycling systems, as well as new products.

Target costing fosters cooperation between internal functions of the organization, as well as between members of the supply chain (Monden and Hamada, 1991). Its introduction can enhance collaboration and awareness of the need to work together both internally and externally.

When considering the value of different functionality, and the need for such functionality, it enhances the understanding of the non-value adding elements of a product. Some of them may be essential even though they do not add any value in the eyes of the customer. This understanding can provide an insight into the areas where cost savings might be more productive, for example, reducing the non-value adding functionality or activities in the manufacture of the product. Careful monitoring and quality control of the component design can also help reduce costs in manufacture.

For example, McKinsey (2000) estimated that overdesign of components in the assembly and electronics industries averaged at least 24%.

The need to reduce the new product development time (Gupta et al., 1992) and the effectiveness of the new product launches (Poolton and Barclay, 1998) help to highlight the importance of the target costing concept process in today's competitive market. If target costing is embraced as the way all products are developed within an organization, that is, it becomes part of the normal culture, it can reduce the time to market for new products and improve the success rate for new product launches.

### **7.8.5 Considerations of implementing target costing**

Target costing requires the development and maintenance of detailed cost data. It is not just a one-off exercise to determine the initial cost but entails monitoring of costs throughout the product life cycle. Only then can experience be gained of how costs behave, and hence the learning fed into future cost estimates on other new products. If activity-based costing is used to help establish costs, it requires the maintenance of the ABC system, which involves the collection of a range of nonfinancial data.

It can be difficult to establish the value of functionality to the customer and its associated cost. It is also difficult to estimate the pricing impact and costs over the life cycle of the product, hence forecasts may be wildly adrift of the actual outturn. If managers view target costing as a way of setting the budget, it can have a demotivating impact if targets are not met. Instead, target costing should be providing the impetus for continuous improvement of operations and cost savings. Many products are launched that have not reached their target cost. Still, a program of continuously seeking to drive costs down without losing functionality, reliability, or quality can be put in place to strive to ensure a contribution is made over the life of the product. Reducing overhead costs and downstream costs, which are difficult to attribute to individual product lines, can also contribute to overall profitability.

Implementation requires a willingness to cooperate within the organization and with external partners. The design team is not always the same as those that have to live with the decisions and the options selected (Yazdifar and Askarany, 2012). Therefore, it is essential to ensure that a wide range of views is represented in the team and that all employees are employed and motivated to reduce costs in line with the principles of target costing, that is, lowering costs without a reduction in functionality, reliability, or quality.

Target costing requires the ability of the organization to capture consumers' views, and those of the members of the supply chain, and to interpret these into product designs. Therefore, excellence in marketing research, as well as product innovation, is a key capability required within the organization.

Target costing is undoubtedly more complex to undertake than cost-plus pricing, and there is a danger that it can be viewed as another accounting buzz word, mainly due to the inclusion of the



word ‘cost’. As we have seen, it should be an inclusive process if it is to be implemented effectively. Resources will need to be invested in the process, and it should be seen as a long-term project to implement the concept, as experience can be fed back into the process so that it contributes to organizational learning. The process becomes more valuable as experience grows. It, therefore, requires the full commitment and support of senior managers within the organization.

**Learning activity.** The process of target costing described is quite detailed. Imagine you are a small business with limited resources. Do you think that the concept of target costing is still useful?

Go back through the steps and think of how you could simplify the process so that it was manageable. It will help you appreciate the concept of target costing. Think about how target costing fits with adding value to a product? If you have a brand-new product concept, would target costing still be appropriate? As an extreme example, think about whether target costing is applicable for space tourism offered by organizations such as Virgin Galactic, Blue Origin, and SpaceX.

## 7.9 Life Cycle Costing

**Active reading.** Note why life cycle costing has become more relevant in today’s business environment. Think about what drives its use. Is it the changing business environment, the increased focus on sustainability that includes disposal and recycling in a product life cycle, or the need to recover the investment in developing new products?

### 7.9.1 Why life cycle costing?

One of the key strategic options available to organizations to sustain a competitive advantage is product development. It can encompass modifications to existing products, for example, adding cameras to cell phones, as well as developing entirely new products. The speed of developments in technology, an increased degree of competition, changing consumer demands, and a heightened awareness of sustainability means that product development is becoming an essential aspect of business strategy. The implication being that resources need to be allocated to activities such as research and development, design, and marketing research. These activities can often be viewed as separate and devolved from the manufacturing and selling process, and the associated costs become lost in the accounting period in which they are incurred.

Accounting systems are good at recording revenues and costs during the normal operating cycle of a business. Costs are typically assigned when they are incurred and reported in periods, such as monthly, quarterly, or annually. These are usually reported against the revenue generated

from the sale of products or provision of the services, within the same period. The primary purpose is to identify the profit or loss.

This practice establishes a relationship between the cost of sales, or service provision, and revenue generation. There is a danger that the costs of initial development, design, pre-production, and costs of disposal at the end of a product's useful life are either forgotten, not considered, or at best marginalized in consideration of the profit or loss generated by the product. When making pricing decisions, it is easy to identify the direct product costs in production, traditionally materials, labor, and machine time, then add on an element for overheads, perhaps via activity-based costing methods, and determine a selling price. Many of the decisions, however, that impact on the product costs during manufacture, distribution, and servicing of a product are made before the production stage.

When considering the overall success of a product, however, it is common to look for a return on investment, where the investment does indeed include the initial development, design, and pre-production costs. These costs are becoming more significant for many businesses as product life cycles are shortening due to the speed of developments in technology and the increased degree of competition. Shorter product life cycles make constant innovation and product development a critical success factor in many business sectors. The concept of life cycle costing suggests that considering the costs of the complete product life cycle from the cradle to the grave, or cradle to cradle, if we consider recycling after use, can provide additional benefits to the organization, particularly in the activities of new product development, affordability studies, source selection, and repair or replace decisions.

## 7.9.2 What is life cycle costing?

**Active reading.** Note the cradle to cradle concept. Think about how life cycle costing and target costing can work together, and at which points in the product life cycle costs can be controlled.

Life cycle costing is not a new concept. A definition was provided in 1976 that suggested: “the life cycle cost of an item is the sum of all funds expended in support of the item from its conception and fabrication through its operation to the end of its useful life” (White and Ostwald, 1976: 39). We could extend this definition to explicitly include the cost of recycling materials from the product following the end of its useful life. The typical stages are illustrated in Figure 7.5.

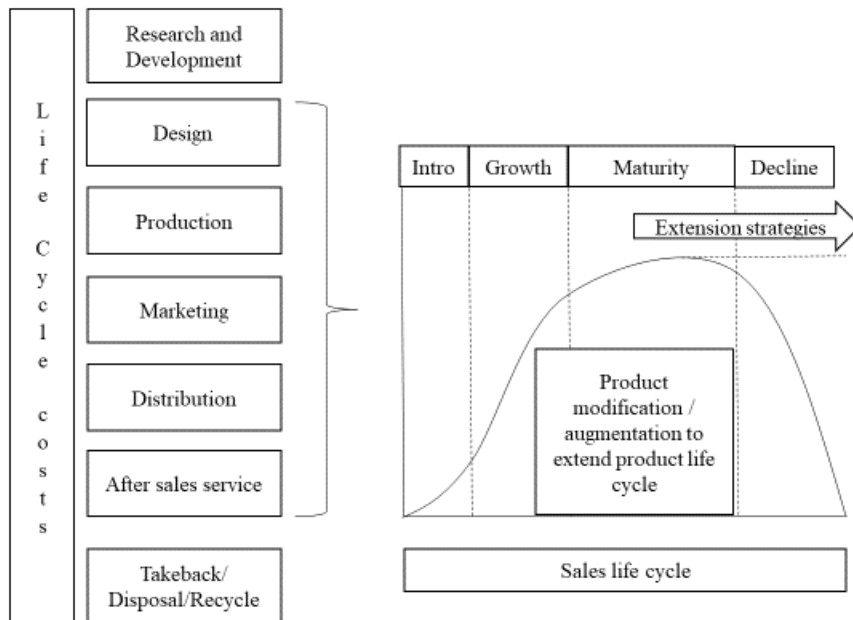


Figure 7.5 Life cycle costs

The life cycle costs include all costs incurred from the initial concept emerging from the research and development process to the recycling of materials at the end of the product's useful life. The diagram in Figure 7.5 also illustrates that modifications may be made to the initial design during a product's life. These modifications often take place during the mature phase of the sales life cycle as competition moves away from price towards product features, and companies adopt extension strategies to prolong the product and sales life cycle. It may not be possible to anticipate the additional functionality and modifications at the initial design phase. Still, there needs to be a recognition that the concept of life cycle costing should be considered when making product modifications, just as much as at the initial new product development stage.

The key phases where costs are incurred in the development of the product and its sales life cycle are illustrated in Figure 7.6. The duration, timing, and degree of overlap of these are dependent on the actual product or modification being developed, but they are useful headings under which to categorize the costs for planning and monitoring purposes. There may even be an element of ongoing consumable costs beyond the initial purchase. For example, a coffee maker such as the Nespresso machine where consumers purchase the machine, then purchase the consumable coffee capsules, which can be returned to a Nespresso recycling point after use. This creates an ongoing recycling cost as well as production costs.

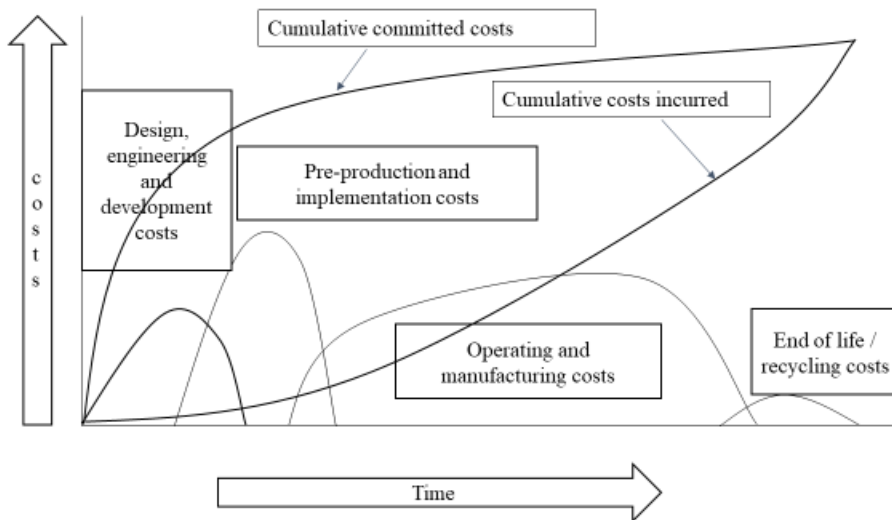


Figure 7.6 Stages in the life cycle costs

Recognizing the different categories of costs allows a trade-off between costs to be considered, for example, between design and manufacture. This categorization of costs also considers the fact that many costs are committed before they are incurred, for example, decisions about materials, the production process, product features, and so on, are made before commencement of manufacture. These costs can be up to 70-90 percent of the total product costs (Bescherer, 2005). The point here is that these costs are typically recorded and reported during the manufacturing phase, and therefore unless considered beforehand, can create surprises for management. The need to be aware of future costs is also relevant for the end of life costs, which are now becoming a key part of product development due to the increased awareness of sustainability issues.

Life cycle costing is connected to other concepts and techniques, for example, the use of target costing. Once the target cost is identified, which is derived from deducting the desired profit from the selling price (Garret, 2018), all phases of the life cycle can be considered in achieving the target cost. The concept is also widely used in the building and construction industry and found in the defense industry and the state sector (Woodward, 1997).

Life cycle costing is not confined to the design and development of new products, but include affordability studies, for example investigating the cost of acquiring and operating a building; source selection studies, for example, between different vendors or products; evaluating alternative operational decisions, such as whether to take out an extended warranty or simply repair or replace.

These uses recognize that life cycle costing can be used from different perspectives. For example, in new product development, it is being used from the perspective of the manufacturer,

but in the selection of alternative suppliers and purchase options, it is being used from the perspective of the client.

### 7.9.3 Life cycle costing and new product development

**Active reading.** Think about the functions that need to work together to develop and successfully launch new products.

The new product development process is shown in Figure 7.7. This process illustrates that there are many costs and activities, other than product costs, that go into developing a commercially successful product or service.



Figure 7.7 New product development phases

The life cycle costs begin during the idea generation and screening stage. It is worth taking a few moments to consider the activity of research and development. The accounting treatment of research and development costs is dealt with under the accounting standards. IAS 38 – Intangible assets. The standard defines the parameters for when development costs may be capitalized and written off over the expected commercial life of the asset. For the purposes of life cycle costing, we should recognize that organizations, such as pharmaceutical companies, may undertake two basic types of research – pure and applied research.

Pure research could be described as research that is undertaken with no real commercial product in mind but is undertaken to further knowledge and understanding. This research may or may not generate future revenue. It is usual practice to write this off in the year in which it is

incurred. Applied research, however, is closer to development costs in that it seeks to solve a specific problem. The development costs include, for example, where a car manufacturer undertakes design, development, construction of a prototype, testing, and pre-production activities. These should all be treated as part of the life cycle costs and, if within the scope of IAS 38, could be written off over the commercial life of the product.

Consideration of the life cycle costs becomes highly significant during the development of the business case, marketing strategy, and commercialization of the product. Marketing research is required to establish whether there is a potential market of the product, what features and functionality consumers desire, and the price they would be prepared to pay for such a product.

Other techniques, such as target costing, may also be highly relevant. Target costing is where the market price, or the price at which consumers would be prepared to purchase the product, is established, and the required profit deducted, which derives the target cost. The derived cost then has implications for product design, development, manufacture, logistics, and takeback/recycling, to be able to develop a viable product that will sell in the market.

When determining where savings in cost can be made, the whole of the life cycle costs can be considered. In fact, the whole of the supply chain may need to be considered. For example, to encourage retailers to stock a particular product, they need to know that an acceptable level of profit per square centimeter can be achieved. This requirement has implications for product size, packing, ease of handling, transportation, storage, and so on. All these factors need to be considered, as well as the wants and needs of the end consumer.

The principle behind target costing is that the starting point is the price to the end consumer. If the old approach of making a product and adding a profit mark-up to the cost is adopted, this may mean that the initial price is too high to attract consumers. Even for new innovative products that are breaking new ground, creating a product that presents an attractive market proposition to consumers is a critical element of a product's success. As the new product increases in sales volume, the average cost per unit will reduce. Therefore, target costing is as much about establishing a price that will be profitable when a certain volume is reached, which considers economies of scale and the effects of the experience curve. Where products are manufactured by a company that then sells to intermediaries, who then sell to end retailers, this means that the costs throughout the whole of the supply chain need to be considered, and are of course, open to consideration in achieving the target price.

Manufacturers need to think in terms of the costs from the cradle to the grave rather than just cradle to gate, where traditionally, once the product had left the factory gate, it became someone else's problem. The cost incurred in transportation, storage, and handling through the supply chain by all intermediaries needs to be considered. Indeed, with sustainability in mind, the concept of carbon miles in transporting the product, and the importance of being able to recycle a high proportion of the products materials after use, indicate that the consideration of costs should be from cradle to cradle.

Table 7.1 provides an example of a life cycle cost report for the introduction of a new vacuum cleaner. This example is the case of a manufacturer that sells direct to the public.

Table 7.1 Life cycle cost calculation for a vacuum cleaner

Sales quantity in units	5,000	7,500	10,000	7,250
Probability	0.3	0.5	0.2	most likely
	\$	\$	\$	\$
Selling price per unit	300	280	250	280
Cost information per unit				
Direct product costs	100	100	100	100
Distribution costs	20	20	20	20
Customer service costs	50	50	50	50
Takeback and recycling costs	10	10	10	10

	\$	\$	\$	\$
Life cycle revenues	1,500,000	2,100,000	2,500,000	2,030,000
Life cycle costs				
R & D costs	200,000	200,000	200,000	200,000
Design costs	80,000	80,000	80,000	80,000
Pre-production costs	100,000	100,000	100,000	100,000
Direct costs of production	500,000	750,000	1,000,000	725,000
Fixed costs of production	250,000	250,000	250,000	250,000
Distribution costs	100,000	150,000	200,000	145,000
Customer service costs	250,000	375,000	500,000	362,500
Takeback and recycling costs	50,000	75,000	100,000	72,500
Total life cycle costs	1,530,000	1,980,000	2,430,000	1,935,000
Life cycle profit/(loss)	(30,000)	120,000	70,000	95,000
% of sales revenue	(2.0%)	5.7%	2.8%	4.7%
Life cycle cost per unit	\$306	\$264	\$243	\$267

The above example does not take account of the time value of money. The analysis could be undertaken using the net present value technique of discounting the cash flows in each year by a suitable discount factor. Other factors, such as inflation, can also be considered. It does take account of the volume effect on fixed cost recovery but does not take account of a learning curve effect, where some costs of manufacture may reduce per unit, as experience of the manufacturing process is built up.

Additional levels of sophistication can be added to the basic model, such as introducing probabilities to the cost estimates. For example, likely repair costs could be estimated based on the experience of failure rates. Each category of cost can be broken down into more elements than is shown in the example.

## 7.9.4 Life cycle costing and building and construction projects

**Active reading.** Think of industry sectors where life cycle costs relating to buildings might be appropriate. For example, supermarkets develop new sites and buildings; universities create new facilities on their campuses; football clubs build sports stadia.

Life cycle costing is used in the building and construction industry. The costs of a building are more than just the construction costs but include the operating or running costs. Energy is a significant element of the running costs, so decisions about energy usage over the life of the project can add significantly to the life cycle costs of a building. Similarly, aspects such as the need for, and ease of maintenance and repair, over the building's life can have an impact on the overall cost. Trade-offs in the cost of materials and maintenance and repair costs are important considerations at the design stage in determining life cycle costs.

Life cycle costing is useful in real estate management when considering alternative buildings. It is highly effective in determining the costs of facility ownership (Fuller and Petersen, 1995). Figure 7.8 illustrates the typical cost categories that should be considered.

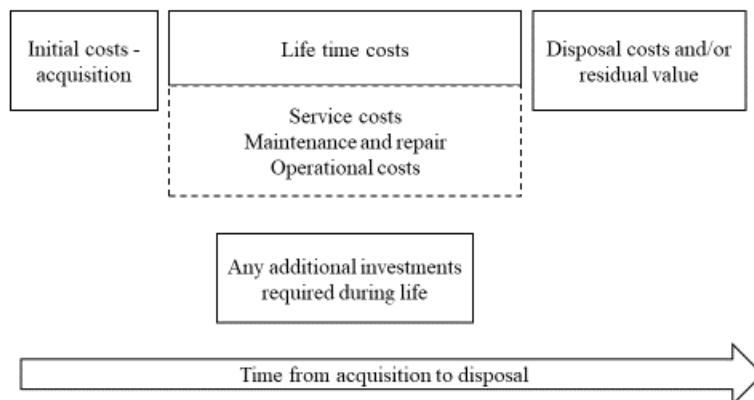


Figure 7.8 Affordability of building decision costs

## 7.9.5 Life cycle costing and comparison and affordability studies

**Active reading.** Manufacturing organizations frequently invest in plant and equipment where there is a choice of alternative suppliers. Why is it important that the investment appraisal is undertaken using the principles of life cycle costing?



Life cycle costing is also a useful tool when comparing products and vendors, for example, where a company has a choice between two different machines that can be used to manufacture its products. The comparison should be undertaken using the principles of life cycle costing, considering running costs, and repair and maintenance costs. This concept is easy to envisage when considering fleet management costs for a delivery company. Not only is there the buy or lease decision and the capacity of logistical space (that is the size of the vehicles), but within that, the running costs, estimated residual values, annual mileage, and replacement policy.

Tables 7.2 – 7.4 illustrates the comparison of a choice between two machines. Machine A can be purchased in the U.K., but a less expensive version can be bought from Asia. The costs of delivery and installation are higher for the machine sourced from Asia. However, the purchase price and delivery and installation in total are still less than the U.K. option. The following information has been gathered about both machines by consulting internal data and the technical specification provided by the manufacturers.

Table 7.2 – Basic data for machine comparison

	Machine A	Machine B
Cost item		
Product price	\$210,000	\$200,000
Equipment life	3 years	3 years
Delivery and Installation cost	\$2,000	\$6,500
Operating labor requirement	1 man	1 man
Labor hour rate	\$10/hr	\$10/hr
Operating hours per day	8	8
Annual operating days	200	200
Preventative maintenance cycle time	500 hrs	100 hrs
Preventative maintenance downtime	2 hrs	3 hrs
Average time between failures	1,500 hrs	500 hrs
Average time to repair	8 hours	36 hours
Maintenance labor rate	\$15/hr	\$15/hr
Parts and supplies cost	1% of purchase price	1.5% of purchase price
Power requirement per hour	9.0 kwh	12 kwh
Cost per kwh	\$0.15	\$0.15

Table 7.3 Workings of running costs

<b>Workings</b>		
Operating labor costs (200 days x 8 hrs x 1 man x £10 per hr x 3 years)	\$48,000.00	\$48,000.00
Total operating hours	4,800.00	4,800.00
Preventative maintenance cycle	500.00	100.00
Number of cycles	9.60	48.00
Preventative maintenance hours	19.20	144.00
Cost per hour \$	15.00	15.00
Cost of preventative maintenance	\$288.00	\$2,160.00
Total operating hours	4,800.00	4,800.00
Corrective maintenance cycle	1,500.00	500.00
Number of cycles	3.20	9.60
Corrective maintenance hours	25.60	345.60
Cost per hour \$	15.00	15.00
Cost of corrective maintenance	\$384.00	\$5,184.00
<b>Power</b>		
Operating hours	4,800.00	4,800.00
Kw per hour	9.00	12.00
Number of kwh	43,200.00	57,600.00
Cost per kwh \$	0.15	0.15
Cost of power	\$6,480.00	\$8,640.00

Table 7.4 Comparison of machines

	\$	\$
Product price	210,000	200,000
Installation cost	2,000	6,500
Operating labor costs	48,000	48,000
Preventative maintenance	288	2,160
Corrective maintenance	384	5,184
Power requirements	6,480	8,640
Parts and supplies cost	2,100	3,000
Total life cycle cost	269,252	273,484

The total cost of the machines can be compared. Over the three-year life cycle, the cost of the machine from Asia is slightly more expensive. As with the example in Table 7.1, the costs involved could be undertaken using a net present value approach if the timing of cash flows is significantly different between the two options. The closeness of the comparison illustrates that the overall financial aspect is only one element of vendor selection.

### 7.9.6 Methods of determining life cycle costs

**Active reading.** Note that life cycle costs deal with costs into the future, and therefore, a degree of estimation is required. Also, note that organizations that have a program of developing new products will gain experience and become better at forecasting and estimating costs. The use of sensitivity analysis is always good practice.

Several methods can be used to determine life cycle costs (Fabrycky and Blanchard, 1991). As with every other decision that potentially has a long-time frame, there is a degree of estimation required, and therefore sensitivity analysis on the estimates should always be carried out. Techniques such as net present value calculations are also highly relevant as future costs and revenues, if appropriate, need to be converted to common values for comparison of alternatives, and present values are a suitable means of doing this.

#### Deterministic

A deterministic approach is where a detailed analysis is undertaken, and the actual cost of each element is costed. While this might be the most accurate means of conducting the analysis, it is dependent on being able to obtain sufficiently accurate information on which to base the calculation of cost. Collecting the data involves working closely with all the functional staff

involved in the life cycle of a product, such as design and production engineers, operations and logistical staff, and marketers, as well as potentially gathering figures from external stakeholders, such as suppliers, intermediaries, and end retailers.

### **Estimation by analogy**

In cases where new products have similar elements to other products which the company has experience of, the cost information of similar products can be used to estimate the likely costs of the new product. This method uses the previous experience of the company and, in some industries where new product development is a key to organizational success, a body of expertise can be built up that provides the basis of reasonable estimates.

### **Stochastic – probabilistic approach**

To account for the risk aspect, and the fact that many costs are estimated, probabilities can be applied to the costs to create expected values. Previous experience can be used to generate statistical analysis. For example, failure rates, learning curve effects, and so on, can be calculated based on past products and used to help the life cycle costs of new products. Also, the degree of accuracy of previous estimates over the actual costs incurred can be monitored to build up experience of the costs of activities involved and be applied to future cost estimates.

## **7.9.7 Benefits of life cycle costing**

**Active reading.** Think about how decisions involving life costing aid the development and implementation of the strategy.

The key benefits of using life cycle costs include:

### **Greater transparency of future costs**

Life cycle costing forces a consideration of all the costs incurred through the whole of the supply chain at the development and design stages. It provides the opportunity to open the negotiations early in the process to ensure that all parties add value to the consumer and make a profit.

### **Encourages cooperation through the supply chain**

Life cycle costing encourages companies to work together through the supply chain. For example, decisions taken at the design stage can have an impact on the handling costs of retailers and, thus, the end price to the consumer. It provides a much better understanding of the costs and the consequences of decisions made within the supply chain by all parties, and the potential effect on the attractiveness of the sales proposition to the end consumer.

### **Improved awareness of total costs**

Life cycle costing also ensures that there are no surprises later in the product's life cycle. For example, factors such as the expected life of the product components, and the ease and costs of repair need to be considered. The reliability and maintenance issue can influence the length of the manufacturer's guarantee offered and subsequent costs under warranty claims that could emerge a long time after the initial purchase.

### **Performance versus cost**

Life cycle costing, particularly if used in conjunction with target costing, can aid decisions concerning any necessary trade-offs of performance versus cost. It is always important to consider the requirements of the end customer to reduce the danger of taking away features or functions that reduce costs, but also remove the reason why the product is attractive to the end consumer. Therefore, market research is a crucial part of new product development to ensure that the product does what it is supposed to do, and indeed, performs as the consumer expects, so that it remains an attractive sales proposition.

### **Better forecasting**

Life cycle costing provides a better understanding of costs such that future costs can be anticipated, but also, as experience is gained of life cycle costing, estimates can be made based on previous experience, which will, in turn, improve the accuracy of the forecasts.

### **Ability to plan for future resources**

Understanding the stages of the product's life cycle facilitates the planning and provision of the necessary resources and, allied to better forecasting, to plan for the cost of these resources in advance.

### **Aids pricing decisions**

Understanding the life cycle costs aids the pricing decision. Techniques such as activity-based costing are beneficial in the pricing decisions, but only if the total costs are considered. Ideally, for a product to be successful, all parties in the supply chain need to be able to make a profit. Therefore, it is essential that the total costs, including the effect of volume, are taken into account when setting the price. If life cycle costing is used in conjunction with target costing, it means that the whole of the supply chain can be used to look for potential savings in cost. Often the savings are looked for in the design or manufacturer of the product, but considering alternative methods to

distribute the product, or reducing handling costs through packaging design, or thinking of the sustainability aspects and reducing the cost of recycling materials at the end of the products life, can all be taken into account.

### **Sustainable development**

Life cycle costing encourages a cradle to cradle approach and ensures that the cost of recycling and end of life costs are considered at the initial phases of a product's life.

### **Evaluation of competing outcomes**

In cases where there are alternative options, life cycle costing provides the basis for a decision to be made based on the total life cycle costs, rather than just an element of costs, such as initial purchase price.

## **7.9.8 Considerations in implementing life cycle costing**

**Active reading.** Note the practical implications of using techniques such as life cycle costing. Forewarned is forearmed, so think how they can be overcome by the way the technique is implemented.

### **Time-consuming and resource-intensive**

If detailed cost estimates are to be obtained for every stage of the product life cycle, it adds more time to the new product development process, particularly if third parties in the supply chain are to be involved.

### **Accuracy of data**

It is always difficult to estimate future costs, particularly in instances where there is no track record or no similar experience, on which the estimates can be based. This uncertainty means that some form of sensitivity analysis or application of probabilities is required. Estimation by analogy based on previous experience can help to alleviate some of the issues surrounding the accuracy of data.

### **The difficulty of estimating demand and hence unit costs**

The impact of the volume is also difficult to estimate, which puts a high degree of reliance on marketing estimates of the likely demand, particularly in cases where there is a significant impact on costs in terms of economies of scale and experience curve effects.

## **Technology changes**

Estimating costs over the lifetime can be difficult enough, but also anticipating technology changes that might impact on the costs of production can be almost impossible to forecast. Technology changes illustrate why life cycle costs need to be revisited during the product life cycle as changes occur. Consider the case of software products that are invariably now supplied online instead of via a physical disk, or books that are currently available as e-books, as well as a hard copy. In these cases, the technology has changed the delivery method, reduced the need to hold inventory, and impacted on the production costs, and indeed, potentially changed the nature of the product.

## **Pricing**

The life cycle costs can have an impact on the price, for example, the increased demand for sustainability to be designed into products may have implications for pricing as to who pays for the recycling of materials at the end of the products life. The need to sell at a price that covers the costs makes it essential to use target costing in conjunction with life cycle costing as the start point for target costing is the acceptable market price.

## **Performance management**

Understanding the life cycle costs can provide the basis for performance management. Budgets will often be set based on the estimates made at the business case stage of the new product development process and refined at the commercialization stage. Monitoring of the actual costs, growth patterns based on the marketing strategy, and general performance of the product, will not only provide a platform for assessing performance but build up a databank of information on which to draw when estimating the life cycle costs of other future products. The organization must monitor performance to learn how it can improve in the future.

## **Decision making**

Life cycle costs can have implications for decisions other than just new product development. For example, make or buy decisions, purchase or lease, affordability, comparison of products and vendors, can all benefit from the technique of life cycle costing.

### **Learning activity.**

The following information is provided for product X. Calculate the profit or loss for each level of projected sales volume and the most likely outcome.

Sales quantity in units	1,000	2,000	3,000
Probability	0.3	0.5	0.2
Selling price per unit	\$200	\$180	\$150
Cost information per unit	\$		
Direct product costs	50		
Distribution costs	10		
Customer service costs	15		
Takeback and recycling costs	5		
R & D costs	10,000		
Design costs	15,000		
Pre-production costs	20,000		
Production overheads	50,000		

### Solution

Sales quantity in units	1,000	2,000	3,000	1,900
Probability	0.3	0.5	0.2	most likely
	\$	\$	\$	\$
Selling price per unit	200	180	150	180
Cost information per unit				
Direct product costs	50	50	50	50
Distribution costs	10	10	10	10
Customer service costs	15	15	15	15
Takeback and recycling costs	5	5	5	5



	\$	\$	\$	\$
Life cycle revenues	200,000	360,000	450,000	342,000
Life cycle costs				
R & D costs	10,000	10,000	10,000	10,000
Design costs	15,000	15,000	15,000	15,000
Pre-production costs	20,000	20,000	20,000	20,000
Direct costs of production	50,000	100,000	150,000	95,000
Production overheads	50,000	50,000	50,000	50,000
Distribution costs	10,000	20,000	30,000	19,000
Customer service costs	15,000	30,000	45,000	28,500
Takeback and recycling costs	5,000	10,000	15,000	9,500
Total life cycle costs	175,000	255,000	335,000	247,000
Life cycle profit/(loss)	25,000	105,000	115,000	95,000
% of sales revenue	12.5%	29.2%	25.6%	27.8%
Life cycle cost per unit	175	128	112	130

## 7.10 Methods of Growth

**Active reading.** Note the main methods described but think about the practical implications of each method and situations where the different methods might be the most appropriate way of achieving growth.

The strategic options available to an organization can be viewed as a three-stage process. Review the competitive strategy (section 6.3) for appropriateness given the changes in the environment, decide the strategic option to be undertaken based on Ansoff's ideas, and then determine the best method of achieving the strategy. Growth could be achieved via organic growth, that is, undertaking the strategy by relying on the organization's resources and capabilities, merger or

acquisition, or joint development. This section briefly considers the benefits and drawbacks of each method before looking at the accountant's role.

### **7.10.1 Organic growth/internal development**

Organic growth involves developing the internal resources and capabilities of the organization. The distinct advantage is that the organization is in total control over its destiny and has strategic independence. The organization does not have to compromise on its strategic plans, but conversely, it is bearing all the risks and costs of development. The process of developing new products and new markets under an organization's resources can sometimes take a long time, involve considerable investment in resources, and carry a high risk. However, it is possible to spread the investment over time, and the organization is gaining experience and enhancing its capabilities via organizational learning through direct involvement in the process of developing new products and markets.

### **7.10.2 Mergers and acquisitions**

The option of a merger or acquisition provides a speedier option than organic development. Entry into new markets or acquiring new products to complement an existing product portfolio can be achieved via merger or acquisition. The strengthening of a poorly balanced product portfolio, as determined by portfolio analysis, could be improved. For example, a merger between two pharmaceutical companies where one has many profitable cash cow products, but few rising stars or question mark products in development, and the other has products in development, but very few cash cows would benefit both companies by producing a merged company with a more balanced product portfolio. New capabilities and knowledge can be acquired, such as expertise in technology or enhanced skill base. Local knowledge of markets can be gained, or the strategy can be used as a means of overcoming barriers to entry to overseas markets, perhaps by merging with a local organization already operating in the country.

Financial benefits can arise from mergers, such as improved financial efficiency via a stronger balance sheet or achieving tax efficiencies due to tax treaties between different tax regimes where the companies are based in different countries. Rationalizing product capacity or releasing value by selling off unprofitable parts could also be a motivation for merger and acquisition activity.

There are, however, some drawbacks, such as the potential for a clash of cultures. This clash of cultures is more in evidence as the two organizations try to find a way to integrate the operations and potential rationalization costs, such as the elimination of duplicated resources, or excess capacity is closed involving redundancy of personnel.

## Considerations

Factors that need to be considered when undertaking an acquisition or merger include:

- Strategic fit—does it build on the strengths, address the weaknesses, grasp the opportunities, or help to minimize the threats?
- Financing—how will the acquisition be financed? What level of financial risk is involved?
- Stakeholders' attitude, particularly shareholders—what do the stakeholders involved think of the proposed acquisition or merger? Are they for or against? How will they be affected?
- Value of the target—how to value the potential target? What is the ideal price? What is the maximum that the organization is prepared to pay? That is, what are the boundaries for negotiation?
- Effect on other organizations—what is the impact on suppliers, customers, and intermediaries?
- Rationalization costs, both financial and human—what are the costs of integration, and how will these be managed? How will the impact on employees of both organizations be managed?
- Potential synergies—what are the benefits of acquisition or merger in terms of synergies? Operating, marketing, and administrative synergies all need to be considered to ensure that they are achieved.
- The manner of integration and management approach—how much autonomy will be allowed to the acquired or merged organization(s)?

## Integration Issues

The manner of integration of an acquisition can range from leaving the organization completely autonomous to subsuming the organization into the operations of the acquiring organization. This process needs careful consideration as it has implications for the motivation of staff and the effectiveness and costs of the integration. The parent organization also needs to consider the degree of control that it grants to a newly acquired subsidiary or business unit. (Goold and Campbell, 1987) identified three options.

- Financial control in which the parent organization allows a high degree of autonomy but sets strong financial controls.
- Strategic planning in which the parent organization undertakes the planning for the subsidiary and management simply implements the plan.
- Strategic control is a halfway house in which the parent sets strategic guidelines within which the subsidiary has some autonomy. It is sometimes referred to as parental control.

### **7.10.3 Joint Development Forms**

#### **Consortia**

Consortia in which several individual organizations join to undertake a large-scale project, for example, a massive construction project.

#### **Joint Venture**

A joint venture, or equity alliance, in which a separate legal entity is formed to pursue a common purpose. The participant organizations still exist in their own right, and the joint venture is also a separate legal entity that employs its own staff. Profits and losses are shared in accordance with a joint venture agreement, as is the provision of resources and operational aspects of the venture. The key benefits here are that costs and risks can be shared as well as expertise, but there is the potential for disagreement between partners, or worse, the failure of one partner organization. Compromises might also need to be made to accommodate partner views resulting in a dilution of the strategic aims and objectives.

#### **Strategic Alliance**

A non-equity strategic alliance is usually governed by a contractual arrangement, which benefits both parties. Typical examples might be a franchise arrangement in which the franchisor grants certain rights to the franchisees, and provides the product or know-how and training, thus retaining some control over quality as well as managing the brand image and marketing. The franchisee contributes personal commitment to success, capital, and often local knowledge.

#### **Licensing**

There are also licensing agreements whereby the organization grants rights to manufacture a product under license, or confers rights to use a product, process, or brand name for which the licensee pays a royalty payment or fee.

#### **Local Agent**

In the case of overseas developments, the use of local agents is often beneficial as they provide the local knowledge of the market, and regulatory regimes of operating in the country. They can be incentivized to encourage referrals with penalties also imposed to prevent misuse of the arrangement.

## De-Merger and restructuring

An option that should not be overlooked is that of de-merger or restructuring where an organization decides to split into several smaller parts to become more focused on specific markets, or to achieve more flexibility and speed of response to environmental changes from a smaller-scale operation. Unprofitable parts or elements of the business can also be sold off where there is no longer a strategic fit with the overall direction of the organization.

### 7.10.4 Direction and method of growth

The direction and method of growth can be considered as providing a matrix of choice options. Table 7.5 illustrates how, together, they form part of the strategic choice.

Table 7.5 Strategic choice

Method of growth		Internal (organic)	Joint development	Merger or acquisition	Reconstruction
Direction of growth	Market penetration				
	Product development				
	Market development				
	Diversification				

**Learning activity.** Using news articles available on the Internet, research two recent acquisitions or mergers that have been reported. Try and find two in different industry sectors. What were the main reasons given for the acquisitions or mergers that were reported? Are there any similarities between the two that you have found?

## 7.11 Summary

Management accounting can support the generation of strategic options in the following ways:

### Withdrawal options

Working with marketing personnel to identify candidates for the withdrawal of products from markets or withdrawing operations from unprofitable markets. The use of portfolio analysis and customer profitability analysis can be helpful here.

## **Pricing decisions**

Assisting in the pricing decision via costing and pricing strategies. This assistance is particularly useful in market penetration strategies where a loss leader approach might be adopted, as the potential cost of such a strategy needs careful consideration. Similarly, the use of price and product awareness strategies requires careful evaluation before implementation.

## **New markets**

Evaluation of potential new markets and methods of entry in terms of the costs of acquiring the necessary resources and access options to the market.

## **Costing new products**

The use of target costing and life cycle costing methods to understand the costs of product development and evaluating the potential viability of product development strategies, as well as contributing to the business case or, indeed, assessing the validity of a business case. ABC can also aid the achievement of target costs by highlighting costly activities. Benchmarking exercises can also be employed to improve the operation of the value creation system.

## **Methods of growth**

Evaluating the various methods of growth in financial terms, including assisting in the negotiation of a joint venture or strategic alliance contractual issues. The accountant could help the legal team in agreeing on the terms of any joint venture by providing detailed financial estimates and allocation of costs.

## **Investment appraisal**

Using knowledge of investment appraisal techniques, such as net present value calculations (section 8.5) and associated sensitivity analysis, in the evaluation of methods of growth, particularly if used as a basis for valuing an acquisition target. The accountant can make a significant contribution to the financial aspects of the initial feasibility study as well as the strategic aspects. The overall assessment of the feasibility of the project should include an initial financial appraisal and, at a later stage, as more detailed information becomes known and costs and revenue projections become more accurate, updated for known changes.

The comparison of actual performance against the plan is also an obvious area for the accountant to be involved—this can aid the learning process for future project appraisals as experience is gained of the option for growth. Knowledge of evaluation techniques and the evaluation of alternative courses of action will be invaluable as the organization makes the final

decision. Incorporating risk assessment and sensitivity analysis into the assessment can also provide valuable information.

### **Due diligence**

Undertaking financial due diligence of the acquisition target or merger company as well as involvement in the strategic due diligence process.

### **Forecasting and monitoring**

The provision of estimates and forecasts/budgets as well as establishing monitoring systems and reporting of actual performance is another area where the accountant can make a significant contribution—generally providing support to nonfinancial managers in the implementation of the strategic option chosen. This does not relate just to the ongoing operations but to the control of initial investment costs and adherence to payment schedules that might be appropriate. Ensuring that the finance is available when required and that the financing of the strategic option chosen is managed effectively.

## **7.12 Review questions**

- (1) Discuss the various strategic options identified in the variation of Ansoff's growth matrix.
- (2) Critically evaluate target costing as a technique to aid the development of a viable product offering.
- (3) Why is life cycle costing important, given today's focus on sustainability issues?
- (4) Discuss the role of life cycle costing in new product development.
- (5) Discuss the merits of acquisition or merger as a means of organizational development.
- (6) When is it appropriate to consider joint development as an option for growth?
- (7) Discuss the advantages and disadvantages of joint development.
- (8) Critically evaluate the contribution that management accounting can make to the generation of strategic options.

## **7.13 Case study activities 13 – 15 – HW Inc.**

The following activities refer to HW Inc. in Appendix A of this learning resource.

## Case study activity 13 – HW Inc. International expansion

### HW Inc. to expand to a new country

HW Inc. is planning to increase its business in emerging economies. The management team has identified Bangladesh as a potential country in which to open stores. Bangladesh is set to be one of the top three fastest growing economies in the next few years. The country has a robust financial sector, and one of the key industries is textiles, which is also a significant export of the region. Its economy has grown on the back of exports of readymade garments. Manufacturers in the region supply clothing to discount companies such as Matalan. The Head Office team has identified the following information about the country.

The population is growing and are becoming more sophisticated consumers. The government-backed growth in telecommunications and technology within the country is fueling the growth of online shopping. Bangladesh is strategically important to the region as its seaports provide access to landlocked regions and countries such as Northeast India, Nepal, and Bhutan. China also sees Bangladesh as strategically important as it allows for a potential gateway to Tibet, Sichuan, and Yunnan.

The government of Bangladesh welcomes investment from foreign companies. It is keen to increase the competition in key industries in the country as a way of improving the economic growth of the country. More than 26% of the population live below the poverty line, so the government is keen to grow the economy and support local industries. Textiles and apparel manufacture are among the key employment industries. Unemployment in the country is about 5%, but many only work a few hours a week. There can be some bureaucracy to be overcome when setting up in business, and supply arrangements are not always as transparent as one might like. Still, generally, the prospect is particularly good for the U.K. and U.S.-based companies. The U.K. Government Export Office suggests that opportunities exist for companies offering quality, lifecycle costs, and after-sales service. Low-cost goods from China and India dominate the market, and as such, the market is very price sensitive.

The Bangladesh economy relies heavily on human resources, and the government is keen to promote education – approximately 20% of the total population (around 29 million people) are students.

Companies such as the International Homeware Company have recently opened stores in Dhaka and is reported to be doing exceptionally well with very favorable reviews on Facebook.

It is usual to appoint a local representative or local agent who understands the regulations and market when setting up a business in Bangladesh. The general advice is that working with a local partner is beneficial, as it is possible to set up an office to sell products and equipment to the end consumer. It is a requirement to register with the Bangladesh Investment Development Authority, and the Register of Joint Stock Companies. The local team suggests that it will be possible to open a store in Dhaka. They estimate that it will take approximately one year to gain the necessary permissions and establish the store, and trading would be able to begin in the second year.



## **Activity requirements**

Using the model of Porter's Diamond outlined in section 7.5, assess whether Bangladesh is a viable option and one that HW could pursue. Also, identify any other aspects or areas of information that you feel HW should investigate before making a final decision.

## **Case study activity 14 – HW Inc. Joint development**

### **HW Inc. expands into out-of-town stores in China JV**

HW China is currently planning to expand its operations in the country. As in most countries, the trend towards out-of-town shopping is still popular and, in some cases, this is being supplemented by 'Shopping Villages'. These are out-of-town single-story retail outlets where consumers can buy discounted top-quality brands. Luxury goods retailers have embraced the concept and are using them to sell old product lines that have been replaced in their high street stores. The shopping villages give consumers who are less wealthy the chance to buy luxury goods, and the retailer an opportunity to dispose of surplus stock and end-of-season product lines.

The Shopping Villages tend to be managed by their owners and management companies, who operate the sites quite aggressively in that they offer short term leases and can change the mix of companies represented depending on current trends. This practice, however, can be quite attractive to retailers where high street leases are typically much longer, so the Shopping Villages offer a lower risk in which to test the market. HW China has operated a small outlet in a Shopping Village near Beijing, which has shown some promise.

The short term lease is coming up for renewal, and HW China is now investigating the opportunity of closing the small store in the Shopping Village and opening a slightly larger store, more in line with an 'out-of-town' store, on a nearby site in the same area. To minimize the risk, HW China is considering entering into a joint venture agreement with a major food retailer. It is felt that this choice of partner would not pose a direct threat to HW China, as the product ranges are complementary but do not directly compete.

However, some of the luxury brands that HW Inc. stock such as Burberry, Prada, Amani, Abercrombie & Fitch, and Hugo Boss were not very happy with the fact that HW China had opened a small store in the Shopping Village, as these major brands have their own outlets in Shopping Villages. The "gift" culture in China means that these brands do very well in Shopping Villages where goods can be discounted by anything between 30% – 70%. These brands, therefore, see Shopping Villages as an excellent way to expand their consumer appeal outside of the large high street stores in which their goods are available. They are not happy about the prospect of HW China opening an out-of-town store, as they feel that this will confuse the consumer. In retaliation, they have indicated that they may not allow their brands to be sold in the out-of-town store.

HW China is keen to see the development approved as they are aware that at least two of their main competitors have opened up small scale stores in Shopping Villages on the fringes of major cities, so they are also testing the out-of-town market. The local government is keen to see the

development go ahead, but there has been some opposition raised from the local community. Also, an agreement has been reached to established public transport links to service the operational superstore, but transport providers are now saying that as people will most likely travel in their cars to the site, they are no longer prepared to maintain the planned frequent services due to estimated low demand.

The central government has expressed concern recently about the impact that the growth in out-of-town stores and Shopping Villages is having on the high street and city center shops. It has commissioned research into the social impact of out-of-town shopping to report within the next six months. HW China has made no firm commitment yet other than to undertake a feasibility study with the Joint Venture Company.

### **Activity requirements:**

- (a) Identify the market opportunities and threats that confront HW China if it adopts a strategy of developing more out-of-town stores in the future.
- (b) Undertake a stakeholder analysis concerning the strategic decision to open the out-of-town store on the fringes of Beijing.
- (c) Discuss the merits and drawbacks for HW China of pursuing out-of-town developments entirely on its own or as a joint development with other retailers. Pay special attention to the practical aspects and operational difficulties which may arise.

## **Case study activity 15 – HW Inc. Growth strategies**

### **HW Inc. diversification into telecoms**

#### **Introduction**

The senior management team has been investigating the possibilities of diversifying its activities. They have looked at supermarkets and other retailers that have successfully diversified into telecommunications and media, such as Amazon, Tesco, Virgin, and other major companies with the provision of the mobile phone and then into more media-related activities.

Caroline Quinn (Marketing Director of HW Inc.) has a contact in the media sector that has put HW Inc. in touch with a medium-sized telecommunication company that has ambitious plans to develop the company internationally, as well as to diversify into other areas of media such as TV. XYZ Inc. is looking for a friendly partner to help finance the expansion and would be open to talks about a possible partnership. Caroline Quinn, Shirley Valentine (Finance Director of HW Inc.), and Huang Zu (International Development Director at HW Inc.) have had an initial meeting with the Chairman and the Chief Executive Officer of XYZ Inc. At the meeting, the Chief Executive Officer of XYZ Inc. enthusiastically outlined the company's plans and seemed very keen to sell the idea of a partnership arrangement to HW Inc. One of the attractions for XYZ Inc. was to be

linked to a company such as HW Inc. that had global recognition across six continents. The following is a brief outline of the background and plans of XYZ Inc.

### **XYZ Inc.**

XYZ Inc. is a well-established company providing telecommunications services both nationally and internationally. Its business has been concerned with the provision of telephone lines and equipment and private telecommunications networks. XYZ Inc. has supplemented these network services by offering mobile phones, which, although highly competitive, is still an expanding market worldwide.

The company maintains a diverse customer base, including residential users, multi-national companies, government agencies, and public sector organizations.

### **Strategic development**

The Chairman of XYZ Inc. stated within the latest Annual Report that there were three main areas in which the company aims to develop to remain a world leader in the telecommunications market. He believes that the three main growth areas reflect the evolving nature of the telecommunications market and will provide scope for development.

The areas in which development is planned are:

1. Expansion of the telecommunications business in the national and overseas markets, both by the company acting on its own and through partnership arrangements with other suppliers.
2. Diversification into television and multi-media services, providing the hardware to home entertainment and enhanced broadcasting services.
3. Extension of the joint ventures and strategic alliances to help extend their global reach, particularly in areas such as North America, Europe, and Asia.

The Chairman stated that their status as a world leader in telecommunications was built on a focus on the long-term development of continually improving its services to customers, developing high-quality up to date products, and being innovative, flexible, and market-driven.

### **Business opportunities**

The Chief Executive of XYZ Inc. has stated that the major opportunities for the company lie in the following areas:

- Encouraging greater use of digital services, including making voice calls. Recent research suggests that customers are sending more texts and making fewer voice calls yet downloading more data.
- Provision of advanced services, and research and development into new technology, including superfast broadband and systems integration, for example, making services available on several digital platforms and making more use of the business ecosystem.
- The increasing freedom from government control via deregulation of markets in world-wide telecommunications services.

The company has used an extensive television and poster advertising campaign. This marketing campaign was designed to penetrate further the residential market by encouraging greater use of the digital services with varying charging incentives being offered to encourage customers to use the services more on a range of different digital platforms over fiber optic and superfast broadband connection to their home.

### **Investment plans**

XYZ Inc. is currently planning on making a multimillion-dollar investment in new products that it believes will increase its market share in its domestic market. It currently enjoys a 55% market share in its local market, having previously been a state-owned provider of telecommunications services. It has been a private sector company for some years now, but the competition has found it difficult to make inroads into their domestic market. XYZ Inc. plans to make the most of this situation by investing in retaining the market share, if not increasing it still further.

### **Industry regulation**

Despite the deregulation in some part of the world, several western countries in which XYZ Inc. has a relatively high market share presence, are strengthening the powers of the industry regulators to promote competition and deter anti-competitive behavior.

### **Activity requirements:**

You have been asked by the Supervisory Board of HW Inc. to prepare a report covering the following points concerning XYZ Inc.:

- (a) Explain the nature of the factors in the business environment, which will influence XYZ Inc. in developing its business and increasing its market share [Hint: use PESTEL to undertake a brief environmental analysis].
- (b) To assess the extent of the potential market development opportunities available to XYZ Inc. [Note: Apply Ansoff's Product Market Growth Matrix to do this.]

## 7.14 References

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