

# Strategic Management Accounting

# Strategy

- The origins of the term strategy go back to ancient Greece whereby strategos signified the role of a general in command of an army. By 450 BC, the term was associated with skills in administration, leadership and oration.
- Mintzberg (1985) distinguishes between the notion that strategy can be deliberate and formally espoused and strategy as being emergent, sometimes by accident, and often arising from some level of bottom-up input from the lower reaches of the enterprise.
- Some management theorists view strategy in terms of how it is supposed to be according to them (the prescriptive or normative approach) while others prefer to explore how strategies arise in organisations (the descriptive approach).
- While the prescriptive approach has tended to dominate writings on the design of strategic management accounting systems and techniques, the descriptive perspective has been useful in explaining the process by which such techniques emerge and are operationalised.

# Strategy

- Some management writers have maintained the emphasis on militaristic notions of the term to identify essential dimensions of strategy (Quinn, 1980).
- Adopting this view, we might describe strategy in terms of how an organisation matches its own capabilities with the opportunities in the marketplace in order to accomplish its overall objectives.
- In formulating its strategy, a firm would seek to understand the industry in which it operates. Industry analysis might focus on five forces: (a) **competitors**, (b) **potential entrants into the market**, (c) **equivalent products**, (d) **bargaining power of customers**, and (e) **bargaining power of input suppliers**. These five dimensions have been posited by Porter (1980, 1985, 1996).
- The collective effect of these forces shapes an organisation's profit potential.



# Strategy

- Porter (1985) suggests that a firm has a choice of three generic strategies in order to achieve sustainable competitive advantage:
  - **Cost leadership:** an enterprise aims to be the lowest-cost producer within the industry thus enabling it to compete on the basis of lower selling prices rather than providing unique products or services. This competitive advantage may arise from factors such as economies of scale, access to favourable raw materials prices and superior technology.
  - **Differentiation:** whereby the enterprise seeks to offer products or services that are considered by its customers to be superior and unique relative to its competitors.
  - **A focusing strategy:** which involves seeking competitive advantage by focusing on a narrow segment of the market that has special needs that are poorly served by other competitors in the industry. A focusing strategy recognizes that differences can exist within segments (e.g., customers and geographical regions) of the same market. Competitive advantage is based on adopting either a cost leadership or product differentiation strategy within the chosen segment.

# Strategic management accounting

- For many years strategic management accounting has been advocated as a potential area of development that would enhance the future contribution of management accounting.
- Despite the publicity that strategic management accounting has received there is still no comprehensive conceptual framework of what strategic management accounting is.
  - *Strategic management accounting is an emerging field whose boundaries are loose and, as yet there is no unified view of what it is or how it might develop. The existing literature in the field is both disparate and disjointed (Coad, 1996: 392)*
  - *The provision of information to support the strategic decisions in organizations. Strategic decisions usually involve the longer term, have a significant effect on the organization and, although they may have an internal element, they also have an external element (Innes, 1998).*
  - *The provision and analysis of financial information on the firm's product markets and competitors' costs and cost structures and the monitoring of the enterprise's strategies and those of its competitors in these markets over a number of periods (Bromwich, 1990: 28).*
  - *A form of management accounting in which emphasis is placed on information which relates to factors external to the firm, as well as non-financial information and internally generated information (CIMA - Official Terminology, 2005: 54).*

# Strategic management accounting

## **What is strategic management accounting?**

### **Long term sustainability in South Africa**

The term corporate social responsibility (CSR) emerged in the 1990s. Today, this term has largely been supplanted by the term *sustainability*. The sustainability of a business refers of course to its longer term economic prospects, but also to social and environment sustainability. A CIMA (2010) report on sustainability highlights how some emerging market countries are more focused on sustainability reporting than many leading economies. According to the report, South Africa scored best on corporate level sustainability reporting among the BRICS<sup>1</sup> economies (p. 9). This is attributed to South Africa's broad corporate governance code, which encompasses themes like leadership, sustainability and corporate citizenship. The CIMA report provides some examples of what South African firms are doing. One textile company, Impahla Clothing, which is a supplier to sportswear giant Puma, has developed a rigorous sustainability report. Puma were so impressed with

the report that they are asking all suppliers to voluntarily report in a similar way. Impahla Clothing is a private company, with 176 employees according to its 2009 sustainability report – which extends to more than 50 pages. The report provides performance data under headings like occupational health and safety, environmental management, governance and risk management and human rights. For small business, the company seems to be leading the way.

## **Questions**

- 1** Can you think of some basic management accounting techniques/principles which may be useful when incorporating sustainability into business decisions?
- 2** Do you think any sustainability initiatives directly impact profits?

## **References**

<http://www.cimaglobal.com/Thought-leadership/Research-topics/Sustainability/Sustainability-in-emerging-markets-lessons-from-South-Africa/>

[http://safe.puma.com/us/en/wp-content/uploads/imphala\\_2009.pdf](http://safe.puma.com/us/en/wp-content/uploads/imphala_2009.pdf)

<sup>1</sup>Brazil, India, Russia, China and South Africa.

# Strategic management accounting

- The Chartered Institute of Management Accountants in the UK defines strategic management accounting (SMA) in its Official Terminology (CIMA, 2000, p. 50) as:

*A form of management accounting in which emphasis is placed on information which relates to factors external to the firm, as well as non-financial information and internally generated information.*

- SMA may be viewed as an attempt to integrate insights from marketing management and management accounting within a strategic management framework (Roslender and Hart, 2003). Such a view enables this emerging area to be understood in the context of more established disciplines.
- Certain key differences between conventional management accounting and SMA have been identified:
  - While conventional management accounting adopts a historical orientation coupled with a focus on single decisions, single periods and single entities, SMA is oriented towards the future. Moreover, it seeks to emphasise the cohesiveness and consistency of macro- and micro-level activities and of short- and long-term decisions.
  - Emphasis in SMA is also placed on an enterprise's position relative to that of its competitors in the context of sequences of decisions over multiple time periods.

# Strategic management accounting: external information about competitors

- Management accounting should be more outward looking and should help the firm evaluate its competitive position relative to the rest of the industry by collecting data on costs and prices, sales volumes and market shares and cash flows and resources availability for its main competitors.
- To protect an organization's strategic position and determine strategies to improve its future competitiveness, managers require information that indicates by whom, by how much and why they are gaining or being beaten. This information provides advance warning of the need for a change in competitive strategy.



# Strategic management accounting: accounting in relation to strategic positioning

- Various classifications of strategic positions that firms may choose have been identified in the strategic management literature.
- Porter (1985) suggests that a firm has a choice of three generic strategies in order to achieve sustainable competitive advantage:
  - Cost leadership.
  - Differentiation.
  - A focusing strategy.
- Miles and Snow (1978) distinguish between defenders and prospector strategies.
  - **Defenders:** operate in relatively stable areas, have limited product lines and employ a mass production routine technology. They compete by making operations efficient through cost, quality and service leadership, and engage in little product/market development.
  - **Prospectors:** compete through new product innovations and market development and are constantly looking for new market opportunities. Hence, they face a more uncertain task environment.

# Strategic management accounting: accounting in relation to strategic positioning

- Several studies have examined the relationship between the strategic positioning that they adopt and the emphasis placed on accounting techniques.
  - Simons (1987) found that business units that follow a defender strategy tend to place a greater emphasis on the use of financial measures (e.g., short-term budget targets) for compensating financial managers. Prospector firms placed a greater emphasis on forecast data and reduced importance on cost control.
  - Ittner, Larcker and Rajan (1997) also found that the use of non-financial measures for determining executive's bonuses increases with the extent to which firms follow an innovation-oriented prospector strategy.
  - Shank (1989) stresses the need for management accounting to support a firm's competitive strategies, and illustrates how two different competitive strategies – cost leadership and product differentiation – demand different cost analysis perspectives.

# Strategic management accounting: accounting in relation to strategic positioning

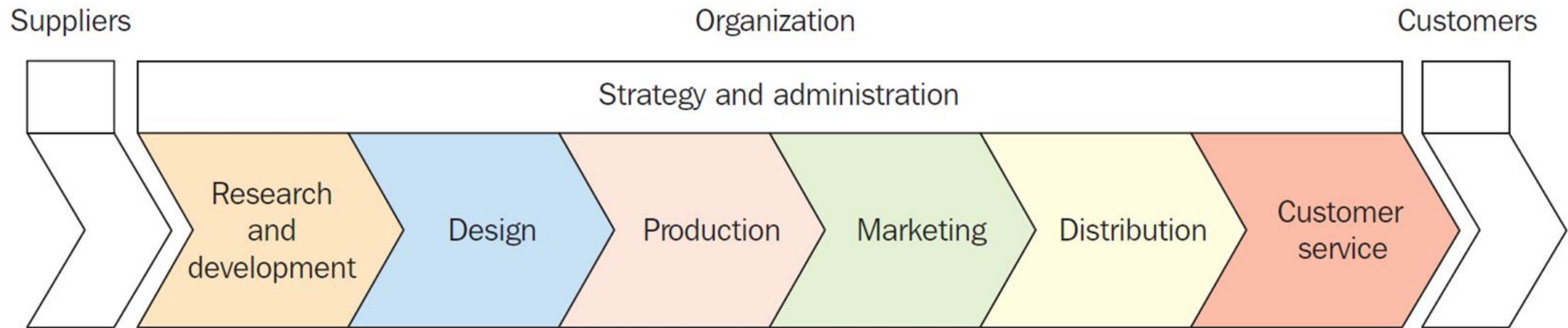
Relationship between strategies and cost management emphasis

	<i>Product differentiation</i>	<i>Cost leadership</i>
Role of standard costs in assessing performance	Not very important	Very important
Importance of such concepts as flexible budgeting for manufacturing cost control	Moderate to low	High to very high
Perceived importance of meeting budgets	Moderate to low	High to very high
Importance of marketing cost analysis	Critical to success	Often not done at all on a formal basis
Importance of product cost as an input to pricing decisions	Low	High
Importance of competitor cost analysis	Low	High

Source: Shank (1989) Strategic cost management: New wine, or just new bottles? *Journal of Management Accounting Research* (1): 47–65.

# Strategic management accounting: gaining competitive advantage using value-chain analysis

- Porter (1985) advocated using value-chain analysis to gain competitive advantage.
- The aim of value chain analysis is to find linkages between value-creating activities which result in lower cost and/or enhanced differentiation. These linkages can be within the firm or between the firm and its suppliers, and customers.



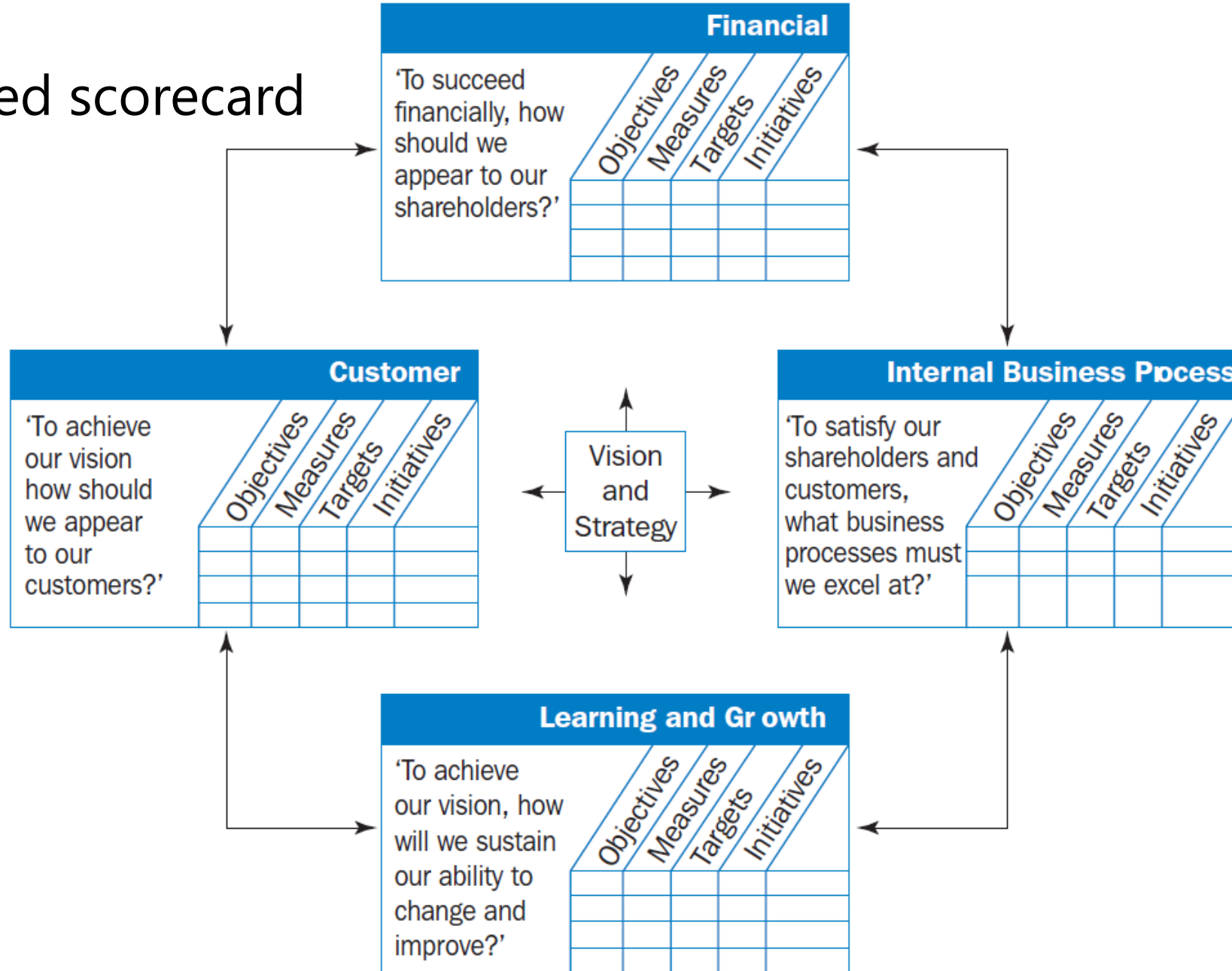
# Balanced scorecard

- A more recent contribution to strategic management accounting that emphasizes the role of management accounting in formulating and supporting the overall competitive strategy of an organization is the balanced scorecard.
- The balanced scorecard seeks to encourage behaviour that is consistent with an organization's strategy. It comprises of an integrated framework of performance measurements that aim to clarify, communicate and manage strategy implementation.
- The need to integrate financial and non-financial measures of performance and identify key performance measures that link measurements to strategy led to the emergence of the balanced scorecard.
- The balanced scorecard reduces managers' emphasis on short-run financial performance, such as quarterly earnings. Why?
  - Because the non-financial and operational indicators measure fundamental changes that a company is making. The financial benefits of these changes may not be captured in short-run earnings, but strong improvements in non-financial measures signal the prospect of creating economic value in the future.

# Balanced scorecard

- The balanced scorecard philosophy creates a strategic focus by translating an organization's vision and strategy into operational objectives and performance measures for the following four perspectives:
  - Financial perspective (How do we look to shareholders?)
  - Customer perspective (How do customers see us?)
  - Internal business perspective (What must we excel at?)
  - Learning and growth perspective (Can we continue to improve and create value?)

# Balanced scorecard



Source: KAPLAN AND NORTON, THE BALANCED SCORECARD: TRANSLATING STRATEGY INTO ACTION, COPYRIGHT © 1996 BY THE HARVARD BUSINESS SCHOOL PUBLISHING CORPORATION; ALL RIGHTS RESERVED.

# Balanced scorecard

## How Southwest Airlines developed its balanced scorecard analysis

Southwest Airlines set 'operating efficiency' as its strategic theme. The four perspectives embodied in the balanced scorecard were linked together by a series of relatively simple questions and answers:

**Financial:** What will drive operating efficiency?

**Answer:** More customers on fewer planes.

**Customer:** How will we get more customers on fewer planes? **Answer:** Attract targeted segments of customers who value price and on-time arrivals.

**Internal:** What must our internal focus be? **Answer:** Fast aircraft turnaround time.

**Learning:** How will our people accomplish fast turnaround? **Answer:** Educate and compensate the ground crew regarding how they contribute to the firm's success. Also, use the employee stockholder programme.

The chart below shows how Southwest used this framework to lay out its balanced scorecard model. The first column of the chart contains the 'strategy map', that illustrates the cause-and-effect relationships between strategic objectives. The Objectives column shows what each strategy must achieve and what is critical to its success. The Measurement column shows how success in achieving each strat-

egy will be measured and tracked. The Target column spells out the level of performance or rate of improvement that is needed. The Initiative column contains key action programmes required to achieve objectives. Note that all of the measures, targets and initiatives are all aligned to each objective.

The company extended the effort to the department level, and the degree of development varied between departments. The goal was to identify key performance measures in each segment for the operating personnel. Some of the non-financial metrics that have emerged on a departmental level include: load factor (percentage of seats occupied); utilization factors on aircraft and personnel; on-time performance; available seat miles; denied-boarding rate; lost-bag reports per 10 000 passengers; flight cancellation rate; employee head count; and customer complaints per 10 000 passengers filed with the Department of Transportation.

## Questions

- 1 Looking at the internal key answer of "fast turnaround time", can Southwest always control this?
- 2 Do you think performance measures like those in the Southwest scorecard are more useful to non-accountants and managers?

## References

*Institute of Management & Administration Report on Financial Analysis Planning and Reporting, July 2002*

Strategic Theme: Operating Efficiency	Objectives	Measurement	Target	Initiative
<b>Financial</b> Profitability Fewer planes More customers	Profitability More customers Fewer planes	Market value Seat revenue Plane lease cost	30% CAGR 20% CAGR 5% CAGR	
<b>Customer</b> Flight is on time Lowest prices	Flight is on time Lowest prices	FAA on time arrival rating Customer ranking (market survey)	#1 #1	Quality management Customer loyalty program
<b>Internal</b> Fast ground turnaround	Fast ground turnaround	On ground time On time departure	30 minutes 90%	Cycle time optimization
<b>Learning</b> Ground crew alignment	Ground crew alignment	% Ground crew trained % Ground crew stockholders	Yr. 1 70% Yr. 3 90% Yr. 5 100%	ESOP Ground crew training



# Balanced scorecard: the financial perspective

- The financial perspective specifies the financial performance objectives anticipated from pursuing the organization's strategy and also the economic consequences of the outcomes expected from achieving the objectives specified from the other three perspectives.
- The objectives and measures from the other perspectives should be selected to ensure that the financial outcomes will be achieved.
- Three core financial themes that drive the business strategy: revenue growth and mix, cost reduction and asset utilization.

<i>Objectives</i>	<i>Measures</i>
<i>Revenue growth:</i>	
Increase the number of new products	Percentage of revenues from new products
Develop new customers and markets	Percentage of revenues from new customers/markets
Change to a more profitable product (or service) mix	Sales growth percentage for targeted segments
<i>Cost reduction:</i>	
Reduce product/service cost per unit	Percentage reduction in cost per unit
Reduce selling/general administration costs	Percentage to total revenues of selling and administration costs
<i>Asset utilization:</i>	
Improve asset utilization	Return on investment Economic value-added

# Balanced scorecard: the customer perspective

- The customer perspective should identify the customer and market segments in which the business unit will compete.
- The customer perspective underpins the revenue element for the financial perspective objectives. Therefore, the achievement of customer objectives should ensure that target revenues will be generated

<i>Objectives</i>	<i>Measures</i>
<i>Core:</i>	
Increase market share	Percentage market share
Increase customer retention	Percentage growth in business from existing customers
Increase customer acquisition	Total sales to new customers
Increase customer satisfaction	Customer survey satisfaction ratings
Increase customer profitability	Customer profitability analysis
<i>Customer value propositions:</i>	
Improve product functionality	Customer survey product functionality rating scores
Decrease price relative to competitors	Price relative to competitors
Improve product/service quality	Percentage returns from customers
Improve delivery time	Percentage on-time deliveries

# Balanced scorecard: the internal business perspective

- The internal business perspective requires that managers identify the critical internal processes for which the organization must excel in implementing its strategy.
- Critical processes should be identified that are required to achieve the organization's customer and financial objectives.
- Objectives of the operation process include, increasing process efficiency, increasing process quality, decreasing process:

<i>Objectives</i>	<i>Measures</i>
<i>Innovation:</i>	
Increase the number of new products	Percentage of sales from new products New product introductions versus competitors
Develop new markets and customers	Percentage of sales from new markets
Decrease the time taken to develop new products	Development cycle time (time to the market)
<i>Operations:</i>	
Increase process efficiency	Output/inputs ratios
Increase process quality	Total quality costs as a percentage of sales Percentage of defective output
Decrease process cost	Unit cost trends
Decrease process time	Manufacturing cycle efficiency
<i>Post-sales service:</i>	
Increase service quality	Percentage of customer requests that are handled with a single call
Increase service efficiency	Output/inputs ratios
Decrease service time	Cycle time in resolving customer problems
Decrease service cost	Unit cost trends

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# Balanced scorecard: the learning and growth perspective

- To ensure that an organization will continue to have loyal and satisfied customers in the future and continue to make excellent use of its resources, the organization and its employees must keep learning and developing.
- Core measures for the employee capabilities; objectives are concerned with employee satisfaction, employee retention and employee productivity.

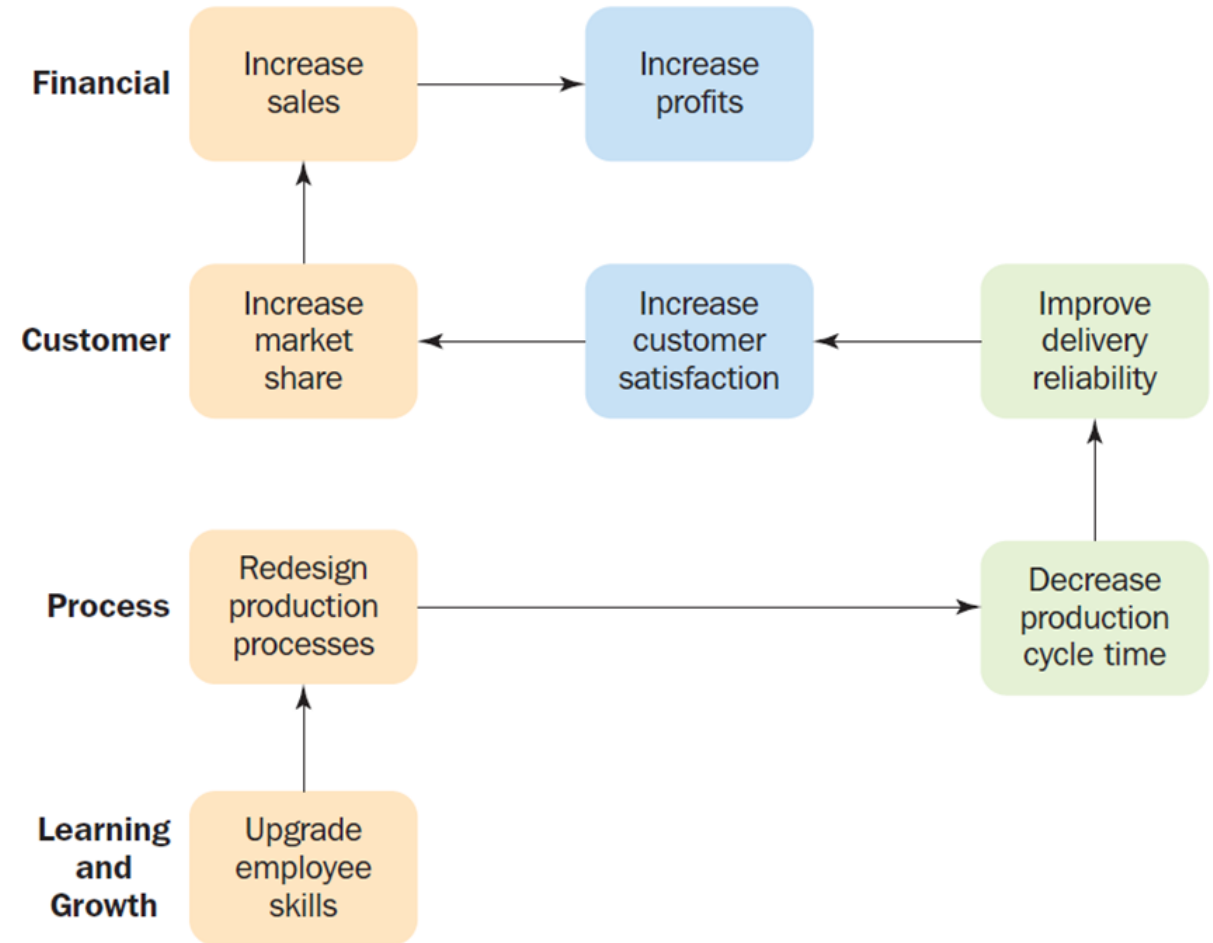
<i>Objectives</i>	<i>Measures</i>
Increase employee capabilities	Employee satisfaction survey ratings Annual percentage of key staff leaving Sales revenue per employee
Increase information system capabilities	Percentage of processes with real time feedback capabilities Percentage of customer-facing employees having on-line access to customer and product information
Increase motivation, empowerment and alignment	Number of suggested improvements per employee Number of suggestions implemented per employee Percentage of employees with personal goals aligned to the balanced scorecard Percentage of employees who achieve personal goals

# Balanced scorecard: lag and lead measures

- The balanced scorecard is not simply a collection of critical performance measures. The performance measures are derived from a company's strategy and objectives.
- The balanced scorecard consists of two types of performance measures:
  - **Lag measures:** these are the outcome measures that mostly fall within the financial perspective and are the results of past actions. Outcome (lag) measures are important because they indicate whether strategy is being implemented successfully with the desired financial consequences. Lag measures generally do not incorporate the effect of decisions when they are made.
  - **Lead measures:** are the drivers of future financial performance. They cause the outcome. These tend to be the non-financial measures relating to the customer, internal business process and learning and growth perspectives.

# Balanced scorecard: cause-and-effect relationships

- A critical assumption of the balanced scorecard is that each performance measure is part of a cause-and-effect relationship involving a linkage from strategy formulation to financial outcomes.
- The chain of cause and effect should permeate all four perspectives of the balanced scorecard. Measures of organizational learning and growth are assumed to be the drivers of the internal business processes. The measures of these processes are in turn assumed to be the drivers of measures of customer perspective, while these measures are the driver of the financial perspective.
- The assumption that there is a cause-and-effect relationship is necessary because it allows the measurements relating to the non-financial perspectives to be used to predict future financial performance.



# Balanced scorecard: example - the balanced scorecard for Chipset Ltd for the year 2005

Learning and growth perspective				
Develop process skill	Percentage of employees trained in process and quality management	Employee training programmes	90%	92%
Empower workforce	Percentage of front-line workers empowered to manage processes	Have supervisors act as coaches rather than decision makers	85%	90%
Align employee and organisation goals	Employee satisfaction survey	Employee participation and suggestions programme to build teamwork	80% of employees give top two ratings	88% of employees give top two ratings
Enhance information system capabilities	Percentage of manufacturing processes with real-time feedback	Improve offline data gathering	80%	80%
Improve manufacturing processes	Number of major improvements in process controls	Organise R&D/ manufacturing teams to modify processes	5	5
* (Revenues in 2005 - Revenues in 2004) ÷ Revenues in 2004 = (£28 750 000 - £27 000 000) ÷ £27 000 000 = 6.48%. † Customers increased from 40 to 46 in the year 2005. ‡ Yield = Units of CX1 produced ÷ Units of CX1 started x 100 = 1 150 000 ÷ 1 450 000 x 100 = 79.3%.				



# Balanced scorecard: example - the balanced scorecard for Chipset Ltd for the year 2005

<b>Customer perspective</b>				
Increase market share	Market share in communication networks segment	Identify future needs of customers	69%	79%
	New customers	Identify new target customer segments	69%	66†
Increase customer satisfaction	Customer satisfaction survey	Increase customer focus of sales organization	90% of customers give top two ratings	87% of customers give top two ratings
<b>Internal business process perspective</b>				
Improve manufacturing capability	Percentage of processes with advanced controls	Organise R&D/ manufacturing teams to implement advanced controls	75%	75%
Improve manufacturing quality and productivity	Yield	Identify root causes of problems and improve quality	78%	79.3%‡
Reduce delivery time to customers	Order delivery time	Reengineer order delivery process	30 days	30 days
Meet specified delivery dates	On-time delivery	Reengineer order delivery process	92%	90%
<b>Learning and growth perspective</b>				
Develop process skill	Percentage of employees trained in process and quality management	Employee training programmes	90%	92%
Empower workforce	Percentage of front-	Have supervisors act	85%	90%

# Balanced scorecard: example - the balanced scorecard for Chipset Ltd for the year 2005

Objectives	Measures	Initiatives	Target performance	Actual performance
<b>Financial perspective</b>				
	Operating profit from productivity gain	Manage costs and unused capacity	£2 000 000	£2 100 000
Increase shareholder value	Operating profit from growth	Build strong customer relationships	£3 000 000	£3 420 000
	Revenue growth	Build strong customer relationships	6%	6.48%*
<b>Customer perspective</b>				
Increase market share	Market share in communication networks segment	Identify future needs of customers	6%	7%
	New customers	Identify new target customer segments	6%	66†
Increase customer satisfaction	Customer satisfaction survey	Increase customer focus of sales organization	90% of customers give top two ratings	87% of customers give top two ratings
<b>Internal business process perspective</b>				
Improve manufacturing capability	Percentage of processes with advanced controls	Organise R&D/ manufacturing teams to implement advanced controls	75%	75%
Improve manufacturing	Yield	Identify root causes	78%	79.3%‡

# Balanced scorecard: benefits and limitations of the balanced scorecard approach

- The following is a summary of the major benefits that can be attributed to the balanced scorecard approach:
  - The scorecard brings together in a single report four different perspectives on a company's performance that relate to many of the disparate elements of the company's competitive agenda.
  - The approach provides a comprehensive framework for translating company's strategic goals into a coherent set of performance measures by developing the major goals for the four perspectives and then translating these goals into specific performance measures.
  - The scorecard helps managers to consider all the important operational measures together. It enables managers to see whether improvements in one area may have been at the expense of another.
  - The approach improves communications within the organization and promotes the active formulation and implementation of organizational strategy by making it highly visible through the linkage of performance measures to business unit strategy.

# Balanced scorecard: benefits and limitations of the balanced scorecard approach

- The balanced scorecard has also been subject to frequent criticisms.
  - Most of them question the assumption of the cause-and-effect relationship on the grounds that they are too ambiguous and lack a theoretical underpinning or empirical support. The empirical studies that have been undertaken have failed to provide evidence on the underlying linkages between non-financial data and future financial performance (American Accounting Association Financial Accounting Standards Committee, 2002).
  - Other criticisms relate to the omission of important perspectives, the most notable being the environmental/impact on society perspective and an employee perspective. It should be noted, however, that Kaplan and Norton presented the four perspectives as a suggested framework rather than a constraining straitjacket.

## Exercise 22.11 Balanced scorecard

La Quinta Ltd manufactures corrugated cardboard boxes. It competes and plans to grow by producing high-quality boxes at a low cost that are delivered to customers in a timely manner. There are many other manufacturers who produce similar boxes. La Quinta believes that continuously improving its manufacturing processes and having satisfied employees are critical to implementing its strategy in 2005.

### **Required:**

1. Is La Quinta's 2005 strategy one of product differentiation or cost leadership? Explain briefly.
2. Indicate two measures you would expect to see under each perspective in La Quinta's balanced scorecard for 2005. Explain your answer briefly.

## Exercise 22.11 Balanced scorecard

### Suggested Solution:

1.

La Quinta's 2005 strategy is a cost leadership strategy. La Quinta plans to grow by producing high-quality boxes at a low cost delivered to customers in a timely manner. La Quinta's boxes are not differentiated and there are many other manufacturers who produce similar boxes. To succeed, La Quinta must achieve lower costs relative to competitors through productivity and efficiency improvements.

2.

Measures that we would expect to see on a La Quinta's balanced scorecard for 2005 are:

#### Financial perspective

- Operating income from productivity gain
- Operating income from growth
- Cost reductions in key areas.

These measures evaluate whether La Quinta has successfully reduced costs and generated growth through cost leadership.

## Exercise 22.11 Balanced scorecard

### **Customer perspective**

- Market share
- New customers
- Customer satisfaction index
- Customer retention
- Time taken to fulfil customer orders.

The logic is that improvements in these customer measures are leading indicators of superior financial performance.

### **Internal business process perspective**

- Yield
- Productivity
- Order delivery time
- On-time delivery.

Improvements in these measures are expected to lead to more satisfied customers and in turn to superior financial performance.

### **Learning and growth perspective**

- Percentage of employees trained in process and quality management
- Employee satisfaction
- Number of major process improvements.

Improvements in these measures have a cause-and-effect relationship with improvements in internal business processes, which in turn lead to improved customer satisfaction and financial performance.

## Exercise 22.12 Balanced scorecard

Meredith Ltd makes a special-purpose machine D4H used in the textile industry. Meredith has designed the D4H machine for 2005 to be distinct from its competitors. It has been generally regarded as a superior machine. Meredith presents the following data for the years 2004 and 2005.

	2004	2005
Units of D4H produced and sold	200	210
Selling price	£40 000	£42 000
Direct materials (kilograms)	300 000	310 000
Direct materials cost per kilogram	£8	£8.50
Manufacturing capacity in units of D4H	250	250
Total conversion costs	£2 000 000	£2 025 000
Conversion costs per unit of capacity	£8 000	£8 100
Selling and customer-service capacity	100 customers	95 customers
Total selling and customer-service costs	£1 000 000	£ 940 500
Selling and customer-service capacity cost per customer	£10 000	£9 900
Design staff	12	12
Total design costs	£1 200 000	£1 212 000
Design costs per employee	£100 000	£101 000



## Exercise 22.12 Balanced scorecard

Meredith produces no defective machines, but it wants to reduce direct materials usage per D4H machine in 2005. Conversion costs in each year depend on production capacity defined in terms of D4H units that can be produced, not the actual units of D4H produced. Selling and customer-service costs depend on the number of customers that Meredith can support, not the actual number of customers Meredith serves. Meredith has 75 customers in 2004 and 80 customers in 2005. At the start of each year, management uses its discretion to determine the number of design staff for the year. The design staff and costs have no direct relationship with the quantity of D4H produced or the number of customers to whom D4H is sold.

### Required:

1. Is Meredith's strategy one of product differentiation or cost leadership? Explain briefly.
2. Describe briefly key elements that you would include in Meredith's balanced scorecard and the reasons for doing so.

# Exercise 22.12 Balanced scorecard

## Suggested Solution:

1.

Meredith Ltd follows a product differentiation strategy in 2012. Meredith's D4H machine is distinct from its competitors and generally regarded as superior to competitors' products. To succeed, Meredith must continue to differentiate its product and charge a premium price.

2.

Balanced Scorecard measures for 2012 are as follows:

### Financial perspective

(1) Increase in operating income from charging higher margins, (2) price premium earned on products.

These measures indicate whether Meredith has been able to charge premium prices and achieve operating income increases through product differentiation.

### Customer perspective

(1) Market share in high-end special-purpose textile machines, (2) customer satisfaction, (3) new customers.

Improvements in these customer measures are leading indicators of superior financial performance.

# Exercise 22.12 Balanced scorecard

## **Internal business process perspective**

(1) Manufacturing quality, (2) new product features added, (3) order delivery time.

Improvements in these measures are expected to result in more satisfied customers and, in turn, superior financial performance.

## **Learning and growth perspective**

(1) Development time for designing new machines, (2) improvements in manufacturing processes, (3) employee education and skill levels, (4) employee satisfaction.

Improvements in these measures have a cause-and-effect relationship with improvements in internal business processes, which in turn lead to customer satisfaction and financial performance.

## Exercise 22.13 Strategy, balanced scorecard, service company

Snyder & Partners is a small information systems consulting firm that specialises in helping companies implement sales management software. The market for Snyder's products is very competitive. To compete, Snyder must deliver quality service at a low cost. Snyder invoices clients in terms of units of work performed, which depends on the size and compacity of the sales management system. Snyder presents the following data for the years 2004 and 2005.

	2004	2005
Units of work performed	60	70
Selling price	£50 000	£48 000
Software implementation labour-hours	30 000	32 000
Cost per software implementation labour-hour	£60	£63
Software implementation support capacity (in units of work)	90	90
Total cost of software implementation support	£360 000	£369 000
Software implementation support capacity cost per unit of work	£4 000	£4 100
Number of employees doing software development	3	3
Total software development costs	£375 000	£390 000
Software development costs per employee	£125 000	£130 000

## Exercise 22.13 Strategy, balanced scorecard, service company

Software implementation labour-hour costs are variable costs. Software implementation support costs for each year depend on the software implementation support capacity (defined in terms of units of work) that Snyder chooses to maintain each year. It does not vary with the actual units of work performed that year. At the start of each year, management uses its discretion to determine the number of software development employees. The software development staff and costs have no direct relationship with the number of units of work performed.

### Required:

1. Is Snyder's strategy one of product differentiation or cost leadership? Explain briefly.
2. Describe briefly key elements that you would include in Snyder's balanced scorecard and your reasons for doing so.

# Exercise 22.13 Strategy, balanced scorecard, service company

## Suggested Solution:

1

Snyder's strategy in 2005 is cost leadership. Snyder's consulting services for implementing sales management software are not distinct from those of its competitors. The market for these services is very competitive. To succeed, Snyder must deliver quality service at low cost. Improving productivity while maintaining quality is key.

2

Balanced scorecard measures for 2005 follow:

### Financial perspective

- Increase operating income from productivity gains and growth
- Revenues per employee
- Cost reductions in key areas, for example software implementation and overhead costs.

These measures indicate whether Snyder has been able to reduce costs and achieve operating income increases through cost leadership.

# Exercise 22.13 Strategy, balanced scorecard, service company

## **Customer perspective**

- Market share
- New customers
- Customer responsiveness
- Customer satisfaction.

Improvements in these customer measures are regarded as leading indicators of superior financial performance.

## **Internal business process perspective**

- Time to complete customer jobs
- Time lost due to errors
- Quality of job. (Is system running smoothly after job is completed?)

Improvements in these measures are expected to lead to more satisfied customers, lower costs and superior financial performance.

## **Learning and growth perspective**

- Time required to analyse and design implementation steps
- Time taken to perform key steps implementing the software
- Skill levels of employees
- Hours of employee training
- Employee satisfaction and motivation.

Improvements in these measures have a cause-and-effect relationship with improvements in internal business processes, leading to improved customer satisfaction and financial performance.

# Cost of quality

- Quality cost management:
  - To compete successfully in today's global competitive environment companies have become 'customer-driven' and have made customer satisfaction an overriding priority.
  - Quality has become a key competitive variable in both service and manufacturing organizations and this has created the need for management accountants to become more involved in the provision of information relating to the quality of products and services and activities that produce them.
  - Total quality management (TQM), a term used to describe a situation where all business functions are involved in a process of continuous quality improvement, has been adopted by many companies. TQM is a customer-oriented process of continuous improvement that focuses on delivering products or services of consistent high quality in a timely fashion.
  - The International Organization for Standardization has introduced five standards known as the ISO 9000 family of standards that provide a certification that a company's quality systems meets certain quality standards.



# Cost of quality

## Cost of quality: bad quality and high costs – BP and Toyota

In recent years, two global companies have had to deal with some quite large costs as a result of quality control failures. First, take the example of Toyota cars in the US. In late 2009 and early 2010, Toyota recalled several of its US models, the Camry in particular, after several accidents occurred due to a faulty accelerator pedal. The recall involved over 5 million vehicles and sales and production were suspended for a time in the US. According to author Paul Ingrassia, the problem occurred because Toyota broke one of their key principles called the ‘three nevers’ at its US manufacturing plants: never build a new product, in a new facility, with a new workforce. In the case of the Camry in the US, all three were broken. A report by the Forbes.com put the estimated cost of the problem at \$2 billion as of February 2010.

In April 2010, the *Deepwater Horizon* drilling rig, which was ultimately under the control of British Petroleum (BP), exploded in the Gulf of Mexico. An oil slick resulted, which lasted for approximately three months and caused extensive damage to the environment and coastlines around the Gulf of Mexico. By June 2010, the costs to BP had racked up to \$1.25 billion. By September 2010, the total costs had risen to almost \$10 billion, with BP setting aside a provision

of \$20 billion. In January 2011, a US presidential commission squarely laid the blame for the disaster at the door of BP and its contractors. The report cited several systemic failures, short-cuts and sub-standard materials and workmanship as the cause, all of which it attributed to management failures.

## Questions

- 1 Can management accountants do anything to help engineers and designers focus more on considering the cost of failures in quality and quality control?
- 2 Can you list some of the internal and external failure costs for the two issues described above?



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# Cost of quality

- Cost of quality reports: managers need to know the costs of quality and how they are changing over time.
- Four categories of costs should be reported:
  - **Prevention costs** are the costs incurred in preventing the production of products or services that do not conform to specification. They include the costs of preventive maintenance, quality planning and training, quality reporting and supplier evaluation and selection.
  - **Appraisal costs** are the costs incurred to ensure that materials, products and services meet quality conformance standards. They include the costs of inspecting purchased parts, work in process and finished goods, quality audits and field tests.
  - **Internal failure costs** are the costs incurred when products and services fail to meet quality standards or customer needs. They include costs incurred before the product is despatched to the customer, such as the costs of scrap, repair, downtime and work stoppages caused by defects.
  - **External failure costs** are the costs incurred when products or services fail to conform to requirements or satisfy customer needs after they have been delivered. They include the costs of handling customer complaints, warranty replacement, repairs of returned products, lost market share and the costs arising from a damaged company reputation. Costs within this category can have a dramatic impact on future sales.

# Cost of quality

- Prevention and appraisal costs are sometimes referred to as the **costs of quality conformance** or compliance and internal and external failure costs are also known as the **costs of non-conformance or non-compliance**.
- **Costs of compliance** are incurred with the intention of eliminating the costs of failure. They are discretionary in the sense that they do not have to be incurred, whereas costs of non-compliance are the result of production imperfections and can only be reduced by increasing compliance expenditure.
- The optimal investment in compliance costs is when total costs of quality reach a minimum. This can occur when 100 per cent quality compliance has not been achieved.
- It is virtually impossible to measure accurately all quality costs (particularly the lost contribution from forgone sales) and determine the optimal investment in conformance costs. However, some people argue that a failure to achieve 100 per cent quality compliance is non-optimal and that a zero-defects policy is optimal.

# Cost of quality report: example

	(£000s)		% of sales (£100 million)
<i>Prevention costs</i>			
Quality training	1 000		
Supplier reviews	300		
Quality engineering	400		
Preventive maintenance	<u>500</u>		
		2 200	2.2
<i>Appraisal costs</i>			
Inspection of materials received	500		
Inspection of WIP and completed units	1 000		
Testing equipment	300		
Quality audits	<u>800</u>		
		2 600	2.6
<i>Internal failure costs</i>			
Scrap	800		
Rework	1 000		
Downtime due to quality problems	600		
Retesting	<u>400</u>		
		2 800	2.8
<i>External failure costs</i>			
Returns	2 000		
Recalls	1 000		
Warranty repairs	800		
Handling customer complaints	500		
Foregone contribution from lost sales	<u>3 000</u>		
		<u>7 300</u>	<u>7.3</u>
		<u>14 900</u>	<u>14.9</u>

# Non-financial measures of quality and customer satisfaction

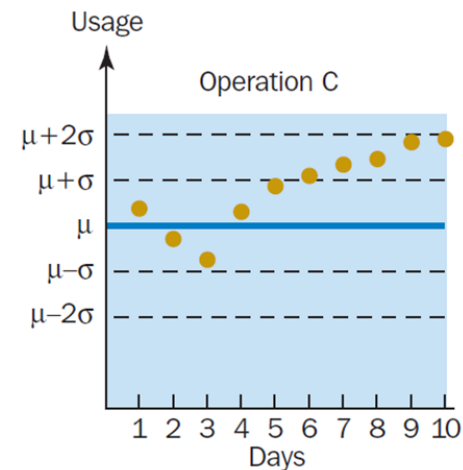
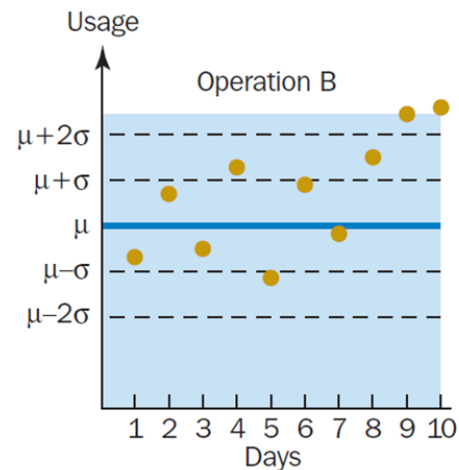
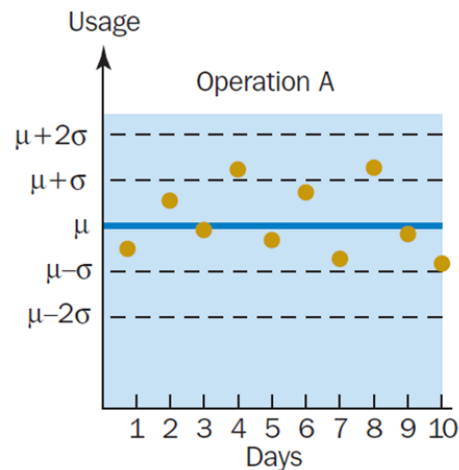
- In addition to financial measures, organizations need non-financial measures relating to the quality of the products and services and the activities that produce them.
- Typical measures provided by the management accounting information system relating to internal processes include:
  - process parts per million (PPM) defect rates for each product line;
  - the number and percentage of defects for each product line;
  - process yields (ratio of good items produced to good items entering the process);
  - supplier performance measures such as percentage of defects of incoming materials and the number of late deliveries.
- Non-financial measures relating to customer satisfaction include:
  - number and percentage of defective goods delivered to customers;
  - number and percentage of customer complaints;
  - percentage of products that do not meet the warranty requirements;
  - percentage of deliveries that are not on time.

# Control charts

- Cost of quality reports and non-financial measures provide top management with an overview of the cost of quality and quality performance but they must be supplemented by techniques for the detailed daily control of the quality of operations and processes.
- Statistical quality control charts are used as a mechanism for distinguishing between random and non-random variations in operating processes.
- A control chart is a graph of a series of successive observations of operations taken at regular intervals of time to test whether a batch of produced items is within pre-set tolerance limits.
- The control limits are based on a series of past observations of a process when it is under control, and thus working efficiently. It is assumed that the past observations can be represented by a normal distribution. The past observations are used to estimate the population mean and the population standard deviation.

# Control charts

- Assuming that the distribution of possible outcomes is normal, then, when the process is under control, we should expect:
  - 68.27 per cent of the observation to fall within the range  $+1\sigma$  from the mean;
  - 95.45 per cent of the observation to fall within the range  $+2\sigma$  from the mean.
- Control limits are now set. For example, if control limits are set based on two standard deviations from the mean then this would indicate 4.55 per cent (100 per cent – 95.45 per cent) of future observations would result from pure chance when the process is under control. Therefore there is a high probability that an observation outside the 2 control limits is out of control.



## Exercise 21.16

CAL manufactures and sells solar panels for garden lights. Components are bought in and assembled into metal frames that are machine manufactured by CAL. There are a number of alternative suppliers of these solar panels. Some of CAL's competitors charge a lower price, but supply lower quality panels; whereas others supply higher quality panels than CAL but for a much higher price. CAL is preparing its budgets for the coming year and has estimated that the market demand for its type of solar panels will be 100 000 units and that its share will be 20 000 units (i.e. 20 per cent of the available market). The standard cost details of each solar panel are as follows

		\$ per unit
Selling price		60
Bought-in components (1 set)	15	
Assembly & machining cost	25	
Delivery cost	5	45
Contribution		15



## Exercise 21.16

An analysis of CAL's recent performance revealed that 2 per cent of the solar panels supplied to customers were returned for free replacement, because the customer found that they were faulty. Investigation of these returned items shows that the components had been damaged when they had been assembled into the metal frame. These returned panels cannot be repaired and have no scrap value. If the supply of faulty solar panels to customers could be eliminated then, due to improved customer perception, CAL's market share would increase to 25 per cent.

### Required:

1. Explain, with reference to CAL, quality conformance costs and quality non-conformance costs and the relationship between them.
2. Assuming that CAL continues with its present systems and that the percentage of quality failings is as stated above: (i) Calculate, based on the budgeted figures and sales returns rate, the total relevant costs of quality for the coming year. (ii) Calculate the maximum saving that could be made by implementing an inspection process for the solar panels, immediately before the goods are delivered.

## Exercise 21.16

1.

Prevention and appraisal costs are sometimes referred to as the costs of quality conformance or compliance and internal and external failure costs are also known as the costs of non-conformance or non-compliance. Costs of compliance are incurred with the intention of eliminating the costs of failure. They are discretionary in the sense that they do not have to be incurred, whereas costs of non-compliance are the result of production imperfections and can only be reduced by increasing compliance expenditure. The different cost categories are related to the extent that the more that is spent on conformance costs the lower should be the level of quality failures and therefore the lower the nonconformance costs. Organizations must decide on the quality/cost trade off but many organizations are now seeking to implement a zero-defect policy. The question suggests that CAL has positioned itself in the middle of the range of possible quality/cost trade offs because some of its competitors supply lower quality products whereas others supply high quality products.

## Exercise 21.16

2.

(i) Since customer demand is 20 000 good items and 2% of the items supplied are faulty the total number of items to be supplied is 20 408 ( $20\,000 \times 100/98$ ) so that 408 are returned for free replacement. The cost of these 408 units that are replaced free of charge is \$18 360 ( $408 \times \$45$ ). If failures can be eliminated the market share would increase to 25 per cent and this would result in an additional contribution of \$75 000 ( $5\,000 \times \$15$ ). Therefore the cost of non-conformance is \$93 360.

(ii) The inspection process will not avoid internal failures but the lost sales and the delivery cost will be avoided. Thus the cost of internal failure could potentially be reduced to \$16 320 (408 units  $\times$  \$40) giving a saving of \$77 040 ( $\$93\,360 - \$16\,320$ ). The introduction of the inspection process should also provide speedy feedback on internal failures which should result in action taken to reduce future failures.

## Exercise 21.22

HT manufactures and sells consumer goods. The market in which it operates is highly competitive and HT is constantly designing new products in order to maintain its market share. The life cycle of products in the market is extremely short with all of the manufacturers constantly introducing new products or variations on existing products. Consumers consider two main factors when buying these products: price and quality. HT uses a penetration pricing policy when launching its products and is always striving to improve its quality from product design stage through to customer care. As a result it has a 15 per cent market share, and its largest competitor has a 6 per cent market share with around 30 other companies sharing the remainder of the market.

### **Required:**

1. Discuss the relationship between quality conformance costs and product selling prices in HT.

## Exercise 21.22

1.

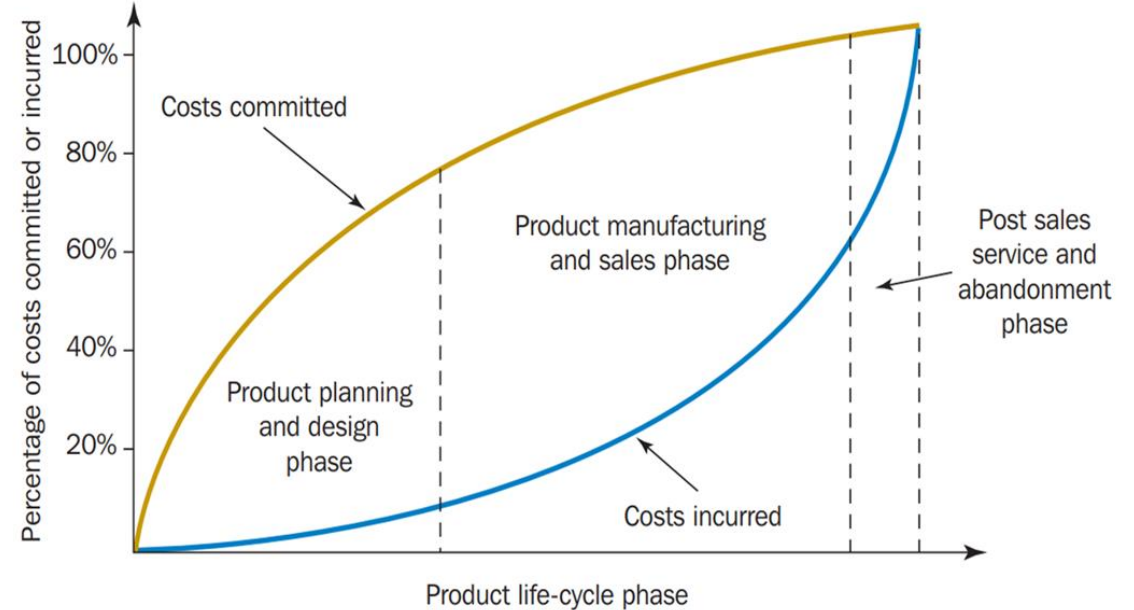
HT is operating in a market where consumers consider price and quality to be the main factors influencing their buying decisions. This raises the question – to what extent are customers prepared to pay for higher quality (i.e. there is a trade-off between price and quality). Increasing product quality results in higher costs but this may be reflected in HT being able to charge higher prices. HT needs to decide whether to follow a low price, low quality strategy or a high price, high quality strategy, or to follow a strategy that lies somewhere between these two extremes.

# Life cycle costing

- Traditional management accounting control procedures have focused primarily on the manufacturing stage of a product's life cycle.
- Pre-manufacturing costs, such as research and development and design and post-manufacturing abandonment and disposal costs are treated as period costs. Therefore, they are not incorporated in the product cost calculations, nor are they subject to the conventional management accounting control procedures.
- **Life-cycle costing** estimates and accumulates costs over a product's entire life cycle in order to determine whether the profits earned during the manufacturing phase will cover the costs incurred during the pre- and post-manufacturing stages.
- Identifying the costs incurred during the different stages of a product's life cycle provides an insight into understanding and managing the total costs incurred throughout its life cycle.
  - It helps management to understand the cost consequences of developing and making a product and to identify areas in which cost reduction efforts are likely to be most effective.

# Life cycle costing

- **Committed or locked-in** costs are those costs that have not been incurred but that will be incurred in the future on the basis of decisions that have already been made.
- Costs are incurred when a resource is used or sacrificed. Costing systems record costs only when they have been incurred. It is difficult to significantly alter costs after they have been committed.
  - For example, the product design specifications determine a product's material and labour inputs and the production process. At this stage costs become committed and broadly determine the future costs that will be incurred during the manufacturing stage.



A typical pattern of cost commitment and cost incurrence during the three stages of a product's life cycle – the planning and design stage, the manufacturing stage and the service and abandonment stage.

# Target costing

- Target costing involves the following stages:
  - Stage 1: Determine the target price which customers will be prepared to pay for the product.
  - Stage 2: Deduct a target profit margin from the target price to determine the target cost.
  - Stage 3: Estimate the actual cost of the product.
  - Stage 4: If estimated actual cost exceeds the target cost investigate ways of driving down the actual cost to the target cost.
- The first stage requires market research to determine the customers' perceived value of the product, based on its functions and its attributes (i.e. its functionality), its differentiation value relative to competing products and the price of competing products.
- The target profit margin depends on the planned return on investment for the organization as a whole and profit as a percentage of sales. This is then decomposed into a target profit for each product which is subsequently deducted from the target price to give the target cost. The target cost is compared with the predicted actual cost.
- If the predicted actual cost is above the target cost intensive efforts are made to close the gap so that the predicted cost equals the target cost. A major feature of target costing is that a team approach is adopted to achieve the target cost.



# Target costing

- Design team for target costing:
  - The team members include designers, engineers, purchasing, manufacturing, marketing and management accounting personnel. The discipline of a team approach ensures that no particular group is able to impose their functional preferences.
  - The aim during the product design process is to eliminate product functions that add cost but which do not increase the market price.
  - Design teams should not be allowed to achieve target costs by eliminating desirable product functions.
  - It is an iterative process with the design team, which ideally should result in the design team continuing with its product and process design attempts until it finds designs that give an expected cost that is equal or less than the target cost.

# Target costing

- Approaches for target costing:
  - **Reverse engineering**
    - Reverse engineering (also known as tear down analysis) involves examining a competitor's product in order to identify opportunities for product improvement and/or cost reduction.
    - The aim is to benchmark provisional product designs with the designs of competitors and to incorporate any observed relative advantages of the competitor's approach to product design.
  - **Value analysis**
    - Value analysis (also known as value engineering) is a systematic interdisciplinary examination of factors affecting the cost of a product or service in order to devise means of achieving the specified purpose at the required standard of quality and reliability at the target cost. The aim of value analysis is to achieve the assigned target cost by (i) identifying improved product designs that reduce the product's cost without sacrificing functionality and/or (ii) eliminating unnecessary functions that increase the product's costs and for which customers are not prepared to pay extra.

# Target costing

- Approaches for target costing:
  - **Process improvements**
    - Both reverse engineering and value analysis focus on product design to achieve cost reductions. The business processes that will be used to produce and market the product are also potential sources of cost reduction. Therefore, it is important that processes are intensively studied with a view to increasing their efficiency in order to achieve the needed cost reductions.
  - **Accurate cost measurement systems**
    - The need for accurate cost measurement systems It is important that target costing is supported by an accurate cost system. In particular, cost drivers should be established that are the significant determinants of the costs of the activities so that cause-and effect allocations are used.

# Target costing

**T**he Digital Electronics Company manufactures cameras and video equipment. It is in the process of introducing the world's smallest and lightest camcorder with 3D HD and SD recording modes. The company has undertaken market research to ascertain the customers' perceived value of the product, based on its special features and a comparison with competitors' products. The results of the survey, and a comparison of the new camcorder with competitors' products and market prices, have been used to establish a target selling price and projected lifetime volume. In addition, cost estimates have been prepared based on the proposed product specification. The company has set a target profit margin of 30 per cent on the proposed selling price and this has been deducted from the target selling price to determine the target cost. The following is a summary of the information that has been presented to management:

Projected lifetime sales volume	300 000 units
Target selling price	£800
Target profit margin (30% of selling price)	£240
Target cost (£800 – £240)	£560
Projected cost	£700

# Target costing

The excess of the projected cost over the target cost results in an intensive target costing exercise. After completing the target costing exercise the projected cost is £555 which is marginally below the target cost of £560. The analysis of the projected cost before and after the target costing exercise is as follows:

	Before		After	
	(£)	(£)	(£)	(£)
<i>Manufacturing cost</i>				
Direct material (bought in parts)	390		325	
Direct labour	100		80	
Direct machining costs	20		20	
Ordering and receiving	8		2	
Quality assurance	60		50	
Rework	15		6	
Engineering and design	<u>10</u>	603	<u>8</u>	491
<i>Non-manufacturing costs</i>				
Marketing	40		25	
Distribution	30		20	
After-sales service and warranty costs	<u>27</u>	<u>97</u>	<u>19</u>	<u>64</u>
Total cost		<u>700</u>		<u>555</u>

