CAPE introduction

This book has been specifically written for students following the CAPE Management of Business course, Unit 2. It has a companion volume that covers Unit 1 of this syllabus.

This volume follows the Unit 2 part of the syllabus very closely and it therefore provides all of the material and support needed by all students.

The key and distinctive feature of both books is the emphasis on Caribbean issues. These are reflected in not only the content of each chapter – with frequent and appropriate references to regional details or examples – but also in many of the case studies and activities that occur within each chapter and in the 'Over-to-you' section at the end of each chapter. These constant reminders of the business environment in the Caribbean in general enable students to put the syllabus material into a familiar context.

Using the book

It is unlikely that even the keenest student will read this text from cover to cover in one evening! Instead, it should be used to support and guide learning as a student progresses through the syllabus. The study of each syllabus topic will be helped by the following features of each chapter:

- Every chapter begins with a list of targets that give a sense of direction to the material being covered.
- A clear reference is given at the start of each chapter to the syllabus module and section referred to in the chapter.
- Each topic is explained carefully, often using revision tables of summary 'advantages and disadvantages', to aid memory.
- At important stages in every chapter there are activities, often based on real-world case studies, that invite students to test their understanding of the topics just covered. These activities contain questions that test different 'skills'. These skills reflect the assessment objectives of the CAPE examiners: knowledge, application, analysis and judgement (or evaluation).
- The Over-to-you section at the end of each chapter contains many short revision questions to test students' understanding of the topics explained in the chapter. There are further activities and case study exercises and some essay questions that require detailed and structured answers.
- Towards the end of the book there is a detailed glossary of all important syllabus terms for ease of reference.
- There is a whole section devoted to multiple choice questions with at least five questions related to each chapter.
- Finally, the answers to the multiple choice questions are given together with some suggested answers to selected case study questions. These questions with suggested answers have been flagged up with a * throughout the book.

Skills needed by students of Management of Business

Your final CAPE examinations will test the following skills:

1 Knowledge and critical understanding of the syllabus content.
2 Application of this knowledge and critical understanding of problems and issues that arise from both familiar and unfamiliar business situations.
3 Analysis of problems, issues and situations. This skill can be demonstrated by:
   - distinguishing between statements of fact and opinion,
   - using Business Studies theories to explain an answer,
   - explaining trends in data and the likely causes of them,
   - examining the implications of a suggested idea or strategy.

4 Evaluation and judgement. This skill can be demonstrated by:
- weighing up the reliability of data,
- discussing issues and arguing points in order to reach an appropriate conclusion,
- discriminating between alternative explanations,
- judging the usefulness of the main concepts and models of Business Studies.

All of these skills will be developed as you progress through this book, especially if you work through the many questions that are presented for your self-assessment.

Finally, the author hopes that the book, as well as providing essential subject support for CAPE students, will achieve two further objectives. Firstly, it will encourage students to be observant and curious about all forms of business activity. Secondly, as a consequence, they will be keen to discover what is happening in business organisations at both national and local levels and to bring these findings to their studies. You are strongly advised to support and update your knowledge through frequent references to business newspapers and magazines, business-oriented TV programmes and business internet sites.

Good luck with your examinations!

Unit 2
Applications in management

1 Major decisions in production and factors involved in production

This chapter covers Unit 2, Module 1, Sections 1 and 2.
On completion of this chapter you should be able to:

- understand the major production decisions that business managers take
- explain and differentiate between the job, batch and flow production systems
- identify and explain the main factors involved in production

Introduction to production and operations management

Operations management used to be known simply as production management. This may still be appropriate when the value of a country's output is dominated by secondary industries producing goods from factories. As the relative importance of this sector of industry has declined in many countries so the focus on 'pure production' has also changed. The issues considered by factory managers, and the decisions they take, are still relevant in the modern world. However, as these same decisions apply to *all* forms of business activity the switch in name has taken place to allow all businesses whether in primary, secondary or tertiary production to be analysed when considering the 'management of operations'.

Operations management is concerned with the use of resources – land, labour and capital – to provide goods and services that will satisfy the demands identified by the market research department. In doing this, operations managers must be concerned with:

- *efficiency of production:* keeping costs as low as possible will help to give competitive advantage;
- *quality:* the good or service must be suitable for the purpose intended;
- *flexibility:* the need to adapt to new methods of working and new products is increasingly important in today's world.

Essentially, operations managers are aiming to produce goods and services of the required quality, in the required quantity, at the time needed, in the most cost effective way.

The production process

In all businesses at all stages of production the production process is basically the same. 'Inputs' are converted or transformed into 'outputs'. This can be simply illustrated (see Figure 1.1).

What to produce

Deciding what to produce is a key issue in the success of any business. There are two diverse approaches to taking this decision. One is based on knowing what the market

Figure 1.1 The production process

wants and producing products to meet consumer needs that have been identified. This is called market orientation. At the other extreme is product orientation – producing what the business is best at.

Market orientation and product orientation

This is an important distinction. Most businesses would today describe themselves as being 'market oriented' or 'market led'. This means that the firm focuses on consumer needs and wants and devotes production and marketing resources to satisfying them. This approach requires market research and market analysis to indicate present and future consumer demand. The consumer is put first. The business will attempt to produce what consumers want rather than try to sell them a product they may not really want to buy. It has certain important advantages, especially in fast-changing, volatile consumer markets. In these cases, increasing consumer awareness of competitors' products, prices and image can result in significant fluctuations in popularity of goods and services. The benefits of market orientation are:

- The chances of newly developed products failing in the market are much reduced – but not eliminated – if effective market research has been undertaken first. With the huge cost of developing new products, such as cars or computers, this is a convincing argument for most businesses to use the market-oriented approach.
- If consumer needs are being met with appropriate products then they are likely to survive longer and make higher profits than those that are being sold following a product-led approach.
- Constant feedback from consumers – market research never actually ends – will allow the product and how it is marketed to be adapted to changing tastes before it is too late and before competitors 'get there first'.

On the whole, then, the days of developing a product and then finding a market for it – the product-oriented concept – are fast disappearing. However, product-led marketing still exists to an extent and the following instances help to explain why:

1 Product-oriented businesses invent and develop products in the belief that they will find consumers to purchase them. The development of the iPod was driven more by technical innovation than by consumer needs – consumers were not aware that such versatile products were likely to be made available until the basic concept had been invented and developed into an innovative new product. Pure research in this form is rare but still exists, for example in pharmaceutical and electronic industries. Here, there is still the belief that if they produce an innovative product of a good enough quality then it will be purchased.

Young man listening to his iPod
Source: Alamy.

2 Production-oriented businesses concentrate their efforts on efficiently producing high-quality goods. They reckon that if the product is of high enough quality then it will be purchased by consumers who value this feature above market fashion or fad-type goods. Such quality-driven firms do still exist, especially in product areas where quality or safety is of great importance, such as bottled water plants or the making of crash helmets.

The trend then is towards market orientation. Two other points are worth noting though. Firstly, if a business attempts to respond to every passing consumer trend or market fashion then it may well over-stretch its resources and end up not doing anything particularly well. Trying to offer choice and range so that every consumer need is met can be expensive. A third way –

between market and product orientation – is called asset-led marketing. This is based on market research too but does not attempt to satisfy all consumers in all markets. Instead, the firm will consider its own strengths in terms of people, assets and image and will only make those products that use and take advantage of those strengths. Using this approach, Levi Strauss restricts its product to clothing and BMW does not enter the commercial vehicle or motor caravan markets. These, and many other firms, focus on their existing assets and products rather than enter entirely new markets.

It is very important to realise that not all marketing-oriented businesses will succeed. Market research and identifying consumer needs is not a guarantee of business success. Success and survival in the competitive markets of the twenty-first century depend upon the whole marketing process. This includes market research but does not end there. The marketing chapters will focus on the entire marketing process. Finding out what the consumer wants and then supplying it at a profit requires the following:

- establishing marketing objectives,
- carrying out effective market research and identifying target groups,
- analysing the markets the firm operates in or plans to enter,
- designing and developing the product,
- testing consumer reaction to product, price and packaging,
- deciding on the most appropriate price,
- establishing a suitable promotion strategy and promotion budget,
- putting in place an effective distribution system,
- continually assessing product sales against target – adjusting marketing variables if sales fail to meet budgeted levels.

Value analysis

This is the process of analysing whether a product or a new product design can be made more efficiently without reducing its consumer appeal. There are three main features involved in the design of any new product. These are:

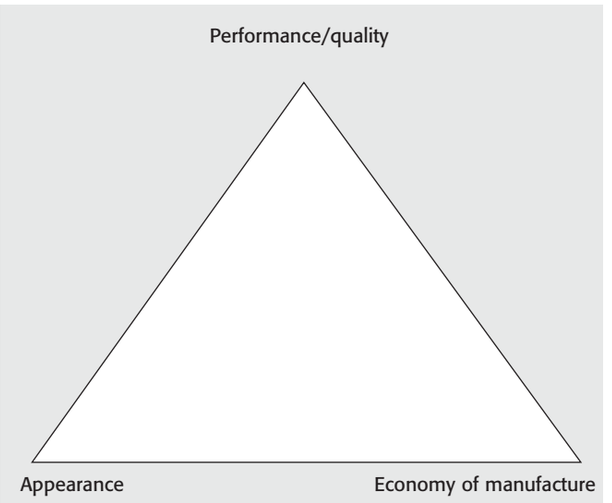

Figure 1.2 Three criteria of value analysis

- *Performance* – does it have the features looked for by consumers and will it be reliable? For example, does a washing machine have all of the functions expected by consumers and will it last, on average, for an acceptable number of years?
- *Appearance* – does it look right? Is the appearance of the product appropriate for the market it is aimed at?
- *Economy of manufacture* – can it be made at a cost level that will allow a profit to be made?

These three features are illustrated in Figure 1.2.

The three corners of the triangle are all 'pulling' the product in different directions. For example, the most reliable washing machine that could last for twenty years may prove to be too expensive to make. A really low slung car with outstanding appearance may not be able to hold four adult passengers – a requirement of the market segment it is aimed at. Finally, a product that is really economical to produce may not have the features expected by the market and may be too flimsy to last long.

How can a compromise be reached? That is the work of value analysts. They will work closely with all relevant departments – marketing, production and finance in particular – to arrive at the best combination of these three features. In the process they may come up with

ideas that allow the product to be made more cheaply but not at the expense of quality or looks. This might happen if the value analysts suggest a different type of material to be used in the product that cuts costs but not appearance or performance. Successful value analysis will involve team working between departments. Comparisons with the competitors' best products in the market might also be necessary. Value analysis will have been worthwhile if the final product turns out to be cheaper to produce than the original design – perhaps cheaper than that of competitors too – but still offers the consumer good looks and 'value for money'.

How to produce: production methods

There are several different ways in which goods and services can be produced. They are usually classified into:

- job production,
- batch production,
- mass or flow production (including mass customisation),
- cell production.

Job production

This is normally used for the production of single, one-off, products. These products are frequently large and are often unique. Thus, good examples of job production would be the Channel Tunnel in the UK or the new Yangtze dam in China. However, products do not have to be large to be produced by job production. Individual wedding cakes and made-to-measure suits are also examples of job production. In order to be considered job production, each individual product has to be completed before the next product is started. Thus, at any one time, there is only one product being made.

New, small, firms often use job production, before they get the chance to expand. Job production enables specialised products to be produced and tends to be motivating for workers, because they produce the whole product and can take pride in it. However, this sort of production tends to be expensive, often takes a long time to complete, and is usually labour intensive. The labour force also needs to be highly skilled and this is not always easy to achieve. Aston Martin is an example of a very expensive car that is individually produced for the needs of each customer. Each engine is hand-built and carries a plate with the engineer's name on it.

Volume car manufacturers use flow production
Source: Courtesy Ford Company.

Batch production

Batch production involves the production of products in separate batches, where the products in the batch go through the whole production process together. The production process involves a number of distinct stages and the defining feature of batch production is that every unit in the batch must go through an individual production stage before the batch as a whole moves on to the next stage.

The most quoted example of this form of production is a baker making batches of rolls. First, the dough is mixed and kneaded. Then, after being left for a time, the dough is separated into individual amounts, the right size for rolls. After this, the rolls are baked together and then they are left to cool. When they have cooled, they are put on display in the shop and another batch can be prepared. Each roll has gone through the process with the other rolls in the batch and all

the rolls have undergone each stage of the batch before going on to the next stage.

Batch production allows firms to use division of labour in their production process and it enables some gain from economies of scale (see unit 1, chapter 3). It is usually employed in industries where demand is for batches of the product – such as different school uniforms. It also allows each individual batch to be specifically matched to the demand and the design and composition of batches can be easily altered. However, there are drawbacks. Batch production tends to have high levels of work-in-progress stocks at each stage of the production process and the work may well be boring and demotivating for the workers.

Batch production should not be confused with flow production. Some firms produce 'batches' of products using a flow production system, for example a soft drinks firm may bottle a batch of 20,000 cans of orange drink before resetting the line and producing a 'batch' of another drink. This is not, however, batch production. The individual items are free to move through the process without having to wait for others, so it must be flow.

Flow production

The process of flow production is used where individual products move from stage to stage of the production process as soon as they are ready, without having to wait for any other products. Flow production systems are capable of producing large quantities of output in a relatively short time and so it suits industries where the demand for the product in question is high and consistent. It also suits the production of a standardised item that only requires minimal alterations. An example would be a Pepsi Cola production plant like the one in Ho Chi Minh City, Vietnam. Here, the product is standardised in that it is a can of soft drink of a standard size. The system is flow production because the cans move through the various stages independently. However, the firm can make changes to the contents of the cans and the labelling on them without having to alter the flow production system. They are capable of producing Pepsi, Sprite, and Schweppes Soda Water on the same production line.

It is essential that the flow production process be very carefully planned, so that there are no disruptions in the system. In a perfect system, the production process would be broken down so that all of the stages were of equal duration and producing equal output levels.

Flow production has a number of advantages over other types of production. Labour costs tend to be relatively low, because much of the process is mechanised and there is little physical handling of the products. The constant output rate should make the planning of inputs relatively simple and this can lead to the minimisation of input stocks through the use of just-in-time (JIT) stock control. Quality tends to be consistent and high and it is easy to check the quality of products at various points throughout the process. The main disadvantage is the high initial set-up cost. By definition, capital-intensive, high-technology production lines are going to cost a great deal of money. In addition, the work involved tends to be boring, demotivating and repetitive.

Activity

Read the case study below and then tackle the exercises that follow.

Case study – Sunburst Bakeries

Sunburst Bakeries is a supplier of all kinds of bread and cakes to leading supermarkets. It has a huge factory that makes the entire range of products – no finished items are bought in from other bakers. Production facilities are split into three main areas. Different production methods are used in these three areas. The demand patterns for three of the best-known Sunburst products are very different. Standard loaves are bought by supermarkets every day, all year round. There is some variation in demand through the seasons – but very little. Large family-sized cakes are mainly bought at weekends – whereas doughnuts are most often bought mid-week for children's lunch boxes. Finally, the business is famous for its hand-made wedding cakes, each one to a different design. There have been rumours in the factory that one section of the factory that uses batch production might be converted into flow line production.

(15 marks, 15 minutes)

1 For each of the products referred to above, suggest and justify an appropriate production method. (8)
2 Explain the possible effects on Sunburst's stock levels and profitability if it replaced all batch production with flow line production. (7)

Recent innovations in production methods

The search for production methods that could combine the advantages of job production – flexibility and worker satisfaction – with the gains from flow production – low unit costs – led to some important developments. These were greatly aided by tremendous advances in technology such as computer aided design (CAD) and computer aided manufacturing (CAM). These have allowed much quicker developments of new products, designs that feature many common components and robotic machinery that can be switched to making a range of parts – not just one. In addition, developments in the organisation of the production flow line have reduced the alienating effects of typical mass production. The emphasis on repetitive, boring tasks has been a major factor in poor worker motivation.

Mass customisation

This process combines the latest technology with multi-skilled labour forces to use production lines to make a range of varied products. This allows the business to move away from the mass marketing approach with high output of identical products. Instead, focused or differentiated marketing can be used which allows for higher added value – an essential objective of all operations managers. So, Dell computers can make a customised computer to suit your specific needs in a matter of hours. By changing just a few of the key components, but keeping the rest the same, low unit costs are maintained with greater product choice.

Cell production

Cell production, fully known as cellular production, is a form of flow production, but the flow production system is separated into a number of self-contained mini-production units, known as cells. The key aim is to create motivation and 'friendly' competition between cells.

Each individual cell will have a team leader and then, below that, a single level of hierarchy made up of workers trained in a number of tasks – multi-skilled staff. The performance of each individual cell is measured in a number of ways against preset targets. These targets will include such things as output levels, quality, lead times and cash targets. Cells are responsible for the quality of their own complete units of work (see Figure 1.3).

The cell system has led to significant improvements in worker commitment and motivation and this, in turn, has led to significant increases in productivity. Success depends upon a well-trained, multi-skilled work force. One of the most noted success stories for cell production is Lucas Industries, which introduced the system to its automotive electrical plants. Within two years, productivity had risen by 25%, the reject level had fallen by 20%, and there had been an 80% reduction in work-in-progress stocks.

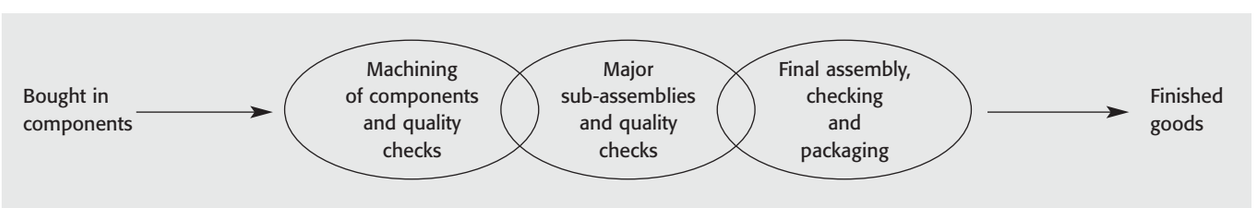

Figure 1.3 How cell production might be organised in an assembly plant

Activity

Read the case study below and then tackle the exercises that follow.

Case study – In search of quality and flexibility

The spread of mass customisation techniques across industries is starting to spell an end to the old production line. Mass production, based on standardised parts and processes, was introduced by Henry Ford in his car plants early in the 20th century. It greatly cut the costs of making each unit but the main drawback was that all

goods coming off a single production line were identical. In *mass customisation* the line can be varied to make different products in small batches.

Caterpillar, the US supplier of construction and power equipment, says that virtually all of the 11,000 engines it makes each year are different. The variation comes from changes to 10–20 per cent of the 1,000 parts that go into each product. Software for the engine controls can also be varied. Cessna makes a wide range of general aviation aircraft from single-engine piston to business jets on several different production lines. Of the 17 different models produced last year, Cessna produced and delivered over 1,200 planes to customers. By producing a variety of models, Cessna was able to market its products to a much wider range of customers.

Mass customisation needs:

- advanced and flexible capital equipment, for example there are now car paint robots that can paint vehicles in 'one-off' colours in between lines of cars in standard colours;
- skilled and well-trained workers to operate this machinery and to be able to adapt it to make different products;
- product designs that contain as many standardised parts as possible in different versions;
- reliable suppliers able to supply slight variations in standard parts or components.

The consultancy Strategic Horizons says examples of mass customisation have increased greatly in the last few years. 'Some time this century mass customisation will be the main form of manufacturing.'

Source: Adapted from *Financial Times*, 30 May 2001.

Cessna 172 Skyhawk is the best-selling aircraft of all time
Source: Cessna Aircraft Company.

(20 marks 25 minutes)

1 Explain the difference between traditional flow or mass production and mass customisation methods of production. (5)

2 Examine the benefits of mass customisation to *either* a computer manufacturer *or* a dress making business. (6)

3 List three of the factors that are necessary for mass customisation to be successful. For each one, explain why you consider it to be important. (9)