School of Accounting Sciences

Department of Management Accounting

Selected Accounting and Financial Management Techniques

Only study guide for

MAC3703

Semesters 1 and 2

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This is an **ONLINE** module, and therefore your module is available on **myUnisa**. However, in order to support you in your learning process, this important study material is also available in printed format.

Dear Student

Enclosed please find the printable copy of the online learning units of your module. Although the printed material might appear to be different from the online learning units due to differences in format, they contain the same information.

Kind regards

LECTURERS: MAC3703

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TOPIC 1 – MODERN DEVELOPMENTS AND APPROACHES FOR THE CHANGING BUSINESS ENVIRONMENT

INTRODUCTION

Some traditional cost planning and management approaches that organisations used previously are becoming less relevant because of changes in the business environment. Consequently, organisations are now using modern costing approaches, which are better suited to the changed business environment characterised by increased global competition and changing customer requirements. The purpose of this topic is to introduce you to these modern management accounting approaches and techniques.

In the new business environment, the focus is on quality, cost and timeliness. Businesses now compete for customers and resources on a global scale. Traditional costing, planning and decision-making techniques often no longer provide optimal solutions. Many of the newer techniques and management philosophies are enabled and supported by integrated information technology (IT) hardware and software.

In this topic, you will firstly learn about various internally orientated modern approaches that organisations use to plan and manage their operations in the changing business environment. We will then conclude with a discussion of the externally orientated cost management approaches that are used to manage relationships with suppliers and customers.

Bear in mind that we base the content of this module on the CIMA syllabus. The CIMA syllabus follows an approach that requires more advice-type questions and fewer calculations than the SAICA syllabus followed in the modules you have studied to date. You need understanding and insight to be in a position to give advice. You should therefore not underestimate the content of the module.

Refer to the beginning of the bespoke BPP reader for clarification on the meaning of the different verbs used in the learning outcomes.

LEARNING OUTCOMES

After studying this topic, you should be able to

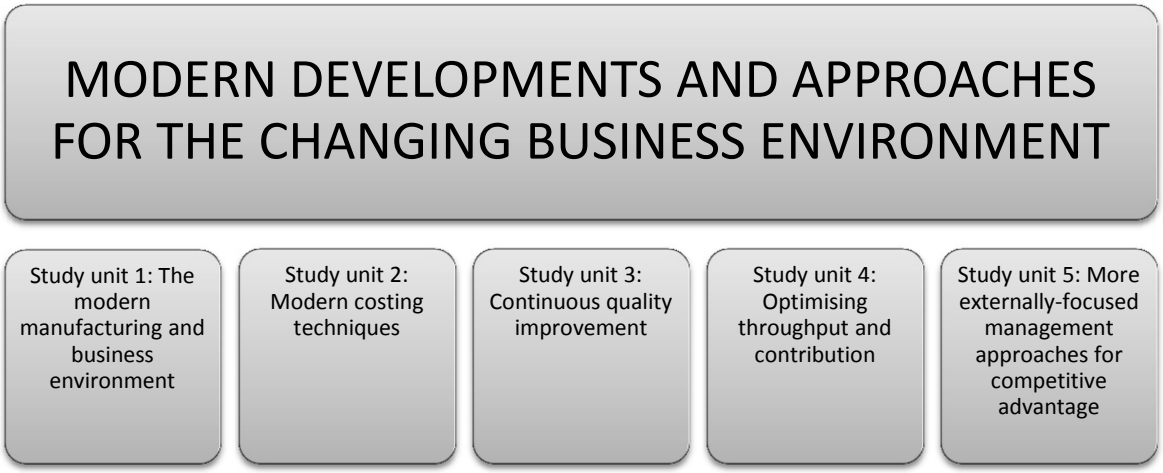
- identify and explain various developments, approaches and systems within the context of the changing business environment, for example synchronous manufacturing and world class manufacturing
- explain the characteristics and challenges associated with a just-in-time (JIT) system, identify the areas where such a system provides benefits over a standard costing system as well as explain and evaluate how JIT manufacturing methods can affect cost accounting, efficiency, inventories and costs
- explain, describe and discuss various modern costing techniques, such as life cycle costing, target costing, value analysis and functional analysis
- contrast target costs with standard costs
- compare and contrast value analysis with functional analysis
- explain environmental costing and apply environmental costing principles in the identification of environmental costs and the quantification of environmental impacts
- explain backflush accounting and its use when material and WIP are minimal
- prepare journal entries based on the trigger points in the backflush accounting system
- describe and explain the characteristics and concepts of various quality management and improvement techniques
- calculate costs of quality and prepare cost of quality reports
- contrast total quality management (TQM) and Kaizen costing approaches with a standard costing approach
- compare and contrast marginal throughput accounting with absorption accounting in their approaches to profit reporting and inventory valuation
- explain, describe and discuss throughput accounting (TA) and the theory of constraints (TOC) as modern costing techniques and evaluate the effect of the TOC on inventories, efficiencies and costs
- discuss various approaches that focus on achieving a competitive advantage by the explicit involvement of external parties or processes, including what their benefits and disadvantages are and for which industries they are suitable

OPTIONAL READING

In 2009, CIMA commissioned the following survey about the extent to which organisations use various traditional and modern management accounting tools. Various concepts discussed in this topic formed part of the survey, so if you are interested in reading sections of the 32 page survey, type the URL from the reference below into your browser and press enter.

Chartered Institute of Management Accountants (CIMA). 2009. *Management accounting tools for today and tomorrow*. Available at:
http://www.cimaglobal.com/Documents/Thought_leadership_docs/CIMA%20Tools%20and%20Techniques%2030-11-09%20PDF.pdf

THIS TOPIC CONSISTS OF THE FOLLOWING STUDY UNITS:



STUDY UNIT 1 THE MODERN MANUFACTURING AND BUSINESS ENVIRONMENT

1. Introduction

To remain competitive, organisations have responded to changes in the business environment by using advanced manufacturing technology, modern production management strategies and resource planning systems.

We base this study unit on **selected sections** from the following chapters in your bespoke BPP reader:

- chapter 9 of P1
- chapter 9A of P2

Very important note:

If we indicate that you have to study a certain section in your bespoke BPP reader, this also incorporates *all* subsections and other parts (questions, etc.) included in the relevant section, unless otherwise specified. In other words, all the content from the start of the section up to the start of the next section forms part of the particular section. This applies to all the topics and study units in this module.

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2. The changing business environment and advanced manufacturing technology (AMT)

The sections you are going to study next will sketch changes in the business environment and identify advanced manufacturing technology (AMT) concepts. They will then briefly contrast traditional manufacturing philosophy with modern manufacturing philosophy.

Now study the following theoretical sections from P1 chapter 9 of your bespoke BPP reader and attempt the activities:

Section	Heading
1	*The changing business environment*
2	*Advanced manufacturing technology (AMT)*

Activity 1.1

Write out the full terms represented by the following acronyms: AMT, CAD, CAM, FMS and EDI.

Solution to activity 1.1

Acronym	Term
AMT	advanced manufacturing technology
CAD	computer-assisted design
CAM	computer-assisted manufacturing
FMS	flexible manufacturing systems
EDI	electronic data interchange

Also study the following theoretical section in P2 chapter 9A and attempt the activities:

Section	Heading
1	*Traditional v modern manufacturing philosophy*

Activity 1.2

Answer question 9A.1 in P2 chapter 9A.

Solution to activity 1.2

Find the solution to question 9A.1 in P2, at the end of chapter 9A.

Note:

It is important to note that the question is which costs **per unit** will be affected. The labour costs per unit are mentioned both as a cost that will increase (on the stockholding side) and a cost that will decrease (on the manufacturing side) as a result of the longer production runs. So a logical reason for the decrease in manufacturing labour costs per unit will be that more productive use is made of existing (available) labour, as labourers are not left idle – the same (fixed) salaries and wages amount will be applicable, but will be recovered by more units,

resulting in a lower manufacturing cost per unit. This was the traditional way of arguing for longer, or larger, production runs.

A logical reason for the increase in stockholding costs per unit could be that inventory may have to be stored for a longer period due to the longer production run. But, why would labour costs per unit increase as a result of this? If a unit does not have to be stored, no one will have to take it to the storeroom, for example, and there will be no labour required. However, if a unit needs to be stored due to the longer production run, labourers will have to do some work in this regard, and the storage cost per unit will increase.

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Activity 1.3

Answer question 9A.2 in P2 chapter 9A.

Solution to activity 1.3

Find the solution to question 9A.2 in P2, at the end of chapter 9A.

Note:

As soon as production units have moved through a stage of the manufacturing process (are complete with regard to the specific stage), these units will be work-in-progress (WIP) inventory that is ready to be processed further in the next stage. The WIP usually waits on the factory floor "in front of" the next process, ready to be used as input material. The production in stages 3 and 4 will only continue uninterrupted for as long as the output or WIP available from stage 2 (before the interruption occurred) lasts. As soon as stage 2 WIP is depleted, manufacturing in stage 3 will come to a halt, and as soon as stage 3 WIP is depleted, stage 4 will come to a halt.

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It could sometimes be advantageous to keep inventory despite the increased inventory holding costs. The economic order quantity (EOQ) formula (used to determine the size of the production run) tries to balance some of these costs to determine the optimum order quantity of material, or the optimum number of units to manufacture. Furthermore, the optimum reorder-level calculations try to reconcile stock-out costs with stockholding costs. You learnt about these concepts in your other MAC modules.

When you learn about JIT production later in this study unit, you will see that no or minimal inventory is kept in a JIT system and that this can expose a business to losses when production is disrupted. However, there are also savings involved when no or minimal inventory is kept, so you should consider an organisation's approach to inventory keeping carefully.

Do you see how changes in the business environment require organisations to become more aware of competitors' actions and customers' demands? Did you notice that this has led organisations to use modern approaches and manufacturing processes, which also tend to embrace advanced manufacturing technology (AMT)?

3. Production management strategies and resource planning systems

The change in the business environment and the increased computational capacity of IT systems also lead to changes in the ways that businesses plan their operations. The section you are going to study now will identify and explain various modern production management strategies and resource planning systems used to manage the production process.

Now study the following theoretical section in P1 chapter 9 of your bespoke BPP reader and attempt the activities.

Section	Heading
3	*Production management strategies*

Note:

A more in-depth discussion of supply chain management (SCM) (at P2 level) is included in study unit 5.

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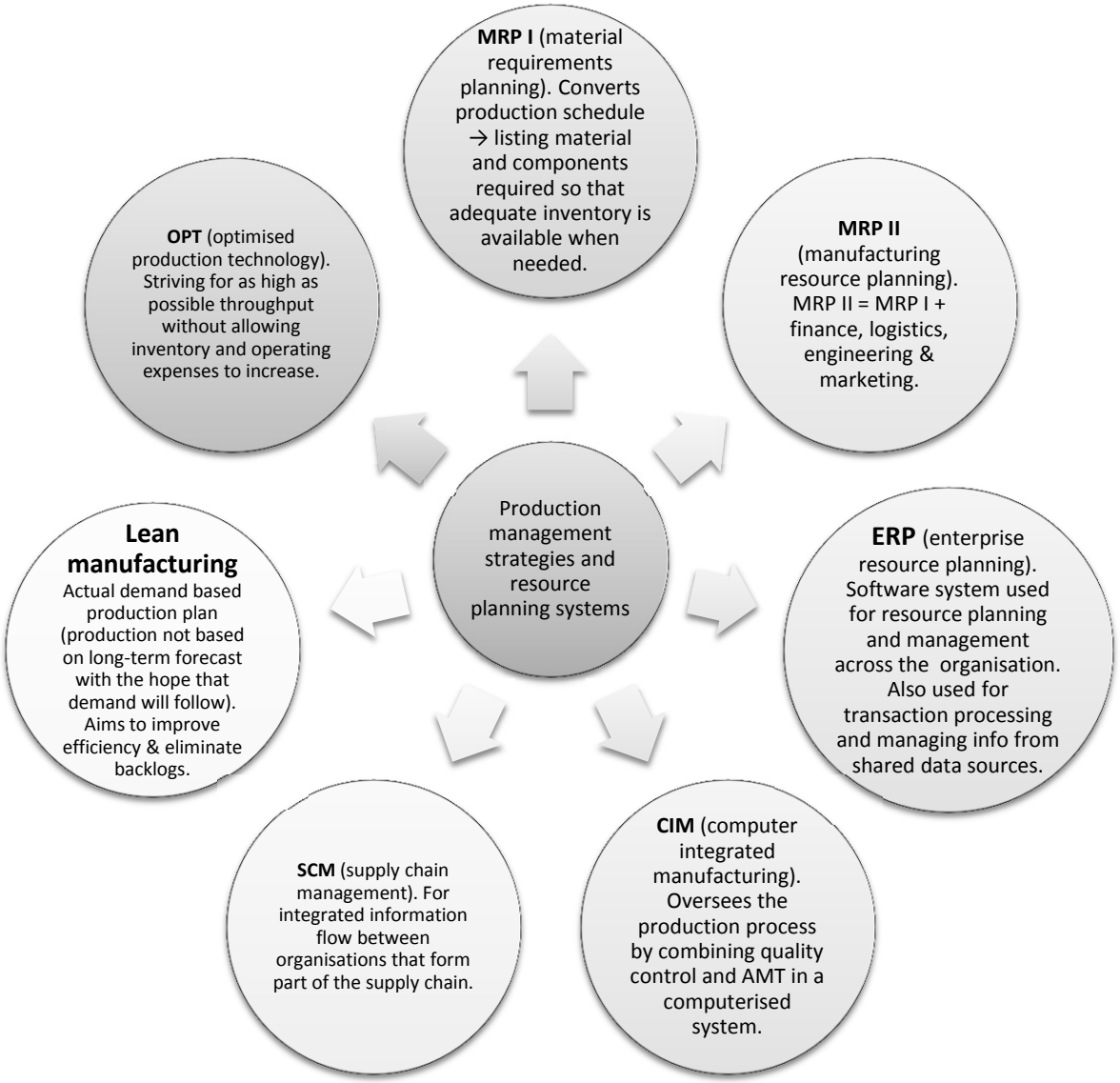
Activity 1.4

Draw a diagram that reflects the various concepts grouped under modern production management strategies and resource planning systems, and briefly explain what each concept involves.

Solution to activity 1.4



[Some of the above explanations were adapted from:

- CIMA Official Terminology, or
- CIMA. 2009. Improving decision making in organisations: The opportunity to reinvent finance business partners. Available from: http://www.cimaglobal.com/Documents/Thought_leadership_docs/cid_execrep_finance_business_partners_Jul09.pdf (accessed 1 November 2013).]

Activity 1.5

Answer question 9.1 in P1 chapter 9.

Solution to activity 1.5

Find the solution to question 9.1 in P1, at the end of chapter 9.

Have you noticed how the approach to manage production strategies and resource planning systems have developed from MRP (that can be used in both traditional and AMT manufacturing environments) to fully integrated and electronically advanced systems, such as ERP, and then to a simpler model called lean manufacturing?

4. Just-in-time (JIT) systems versus synchronous manufacturing

A JIT management approach to production is aimed at purchasing materials and producing final products only when required for use by the organisation or the customer (triggered by customer order), rather than holding inventory to meet expected but uncertain future demand (the traditional approach). The practice of synchronous manufacturing was developed as a means to counter some of the shortcomings of JIT.

Activity 1.6

Before studying the more detailed sections noted below, read the following short opinion article online for an overview of JIT by typing the URL included in the following reference into your browser and pressing enter:

The Economist. 2009. Just-in-time, 6 July. Available at:
http://www.economist.com/node/13976392 (accessed on 22 May 2013).

Now study the following sections in P1 chapter 9 of your bespoke BPP reader:

Section	Heading
4	*Just-in-time (JIT) systems*
5	*Synchronous manufacturing*

Also study the following section in P2 chapter 9A of your bespoke BPP reader and attempt the activities:

Section	Heading
7	*Just-in-time (JIT)*

Did you notice that the JIT philosophy aims to eliminate stockholding in manufacturing organisations (or queues in service organisations), reduce waste and lead to continuous improvement by involving employees at all levels? Did you notice that JIT is also a management philosophy that aims to eliminate non-value added costs and improve the manufacturing cycle efficiency ratio?

Activity 1.7

Answer questions 9.2, 9.3 and 9.4 in P1 chapter 9.

Solution to activity 1.7

Find the solutions to questions 9.2, 9.3 and 9.4 in P1, at the end of chapter 9.

Activity 1.8

Answer questions 9A.6 – 10 in P2 chapter 9A.

Solution to activity 1.8

Find the solutions to questions 9A.6 – 10 in P2, at the end of chapter 9A.

Note:

Did you realise that a JIT system is a **pull system,** where a customer places an order that triggers the placement of material and components into production, which in turn triggers the purchase of materials to fill the order, therefore meeting the demand? This differs considerably from the traditional approach. (The traditional approach uses a push system, where materials are received from suppliers, placed into production and then are either sold to customers or remain in stock as a buffer between production and demand.)

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Synchronous manufacturing, on the other hand, focuses on areas of manufacturing with the largest likelihood of having a positive impact on the bottom line of the organisation if they are improved. This is closely related to the TOC about which you will learn later in this topic.

Activity 1.9

Discuss why some management accountants regard synchronous manufacturing as a better manufacturing philosophy than JIT.

Solution to activity 1.9

Some management accountants reason that synchronous manufacturing is more focused than JIT. They attribute this to synchronous manufacturing concentrating on areas in the production process where improvement have the largest potential to lead to a positive impact on the business and its bottom-line, in contrast with JIT, which they regard as having no specific focus. (JIT seeks process improvements in general – everywhere in the system).

They reason that synchronous manufacturing is superior to JIT as it considers bottleneck resources or constraints **in advance**, when production is scheduled, and not only when problems are identified. Synchronous manufacturing aims to accommodate this in the production schedule to avoid delays in manufacturing, which should translate into an increase in income. If problems are only identified as they arise, as in a JIT system, they could disrupt the production process and result in throughput of less than the optimal level, with the resulting reduction in income.

Note:

Some JIT principles can, however, be incorporated into synchronous manufacturing, provided they are consistent with the principles, procedures and techniques of the synchronous manufacturing philosophy.

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5. World class manufacturing (WCM)

WCM is a broad term covering various aspects, of which the most important are considered to be:

- excellence in people management
- being flexible to customer requirements and responsive to their needs
- using JIT in production
- delivering high quality products by focusing on the causes of poor quality and not on its symptoms

Now study the following section in P1 chapter 9 of your bespoke BPP reader and then attempt the activity:

Section	Heading
8	*World class manufacturing (WCM)*

Activity 1.10

In which of the following areas does an organisation applying the principles of WCM have to excel?

1 production
2 human resource management
3 understanding the value chain
4 scrapping faulty finished goods

Choose the correct alternative:

A 2, 3 and 4
B 1, 2 and 4
C 1, 2 and 3
D All of the above

Solution to activity 1.10

The correct alternative is C. WCM focuses on producing high quality products from the start by proactively identifying and eliminating the causes of bad quality, instead of trying to get rid of faulty or poor quality products that have already been produced.

Note:

In study unit 3, you will learn about total quality management (TQM). When you study the section on TQM, be mindful of how its principles are effectively incorporated by the product quality philosophy of WCM.

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6. Summary

Please see the chapter roundup at the end of every chapter referred to (after the text, but before the quick quiz questions) for a brief summary of the concepts discussed in this study unit.

In this study unit, you learnt to

- identify and explain various developments, approaches and systems within the context of the changing business environment, for example, synchronous manufacturing and world class manufacturing
- explain the characteristics and challenges associated with a JIT system, identify the areas where such a system provides benefits over a standard costing system as well as explain and evaluate how JIT manufacturing methods can affect cost accounting, efficiency, inventories and costs

In the next study unit, we will look at various modern costing techniques developed for achieving a competitive advantage in the modern business environment.

SELF-ASSESSMENT THEORY REVIEW QUESTIONS

After working through all the relevant sections in the reader, as well as the guidance and activities provided in this study unit, you should now be able to attempt the following self-assessment theory review questions and the self-assessment question below these theory questions.

THEORY QUESTION 1

Answer the following quick quiz questions in the BPP reader:

a. Questions 1, 2, 3, 4, 7, 8 and 11 at the end of P1 chapter 9.

b. Question 1 at the end of P2 chapter 9A.

SOLUTION TO THEORY QUESTION 1

a. Find the solutions to quick quiz questions 1, 2, 3, 4, 7, 8 and 11 directly after the quick quiz in P1 chapter 9.

b. Find the solution to quick quiz question 1 directly after the quick quiz in P2 Chapter 9A.

THEORY QUESTION 2

Answer question 13 in the exam question bank of P1.

SOLUTION TO THEORY QUESTION 2

Find the solution to question 13 in the exam answer bank of P1.

SELF-ASSESSMENT QUESTIONS

Now answer the following self-assessment question:

QUESTION 1

Answer question 23 in the exam question bank of P2.

SOLUTION TO QUESTION 1

Find the solution to question 23 in the exam answer bank of P2.

STUDY UNIT 2 MODERN COSTING TECHNIQUES

1. Introduction

In the previous study unit, various modern manufacturing concepts and approaches in response to the changing business environment were introduced and explained. The modern manufacturing environment has resulted in an increase in overhead costs (scheduling, development costs, quality control, etc.). Increased competition necessitates that the organisation fully accounts for all costs incurred in bringing a product to the market and that all costs are eventually recovered from customers on a profitable basis (covered later in topic 3 on pricing decisions and pricing strategies) over the life cycle of the product. Various modern costing techniques have been developed in the quest for competitive advantage, and we will discuss some of these in this study unit.

We base this study unit on **selected sections** from the following chapters in your bespoke BPP reader:

- chapter 7 of P2
- chapter 10 of P1
- chapter 12 of P1

2. Life cycle costing

The section you are going to study next will explain life cycle costing as a cost planning approach which intends to show and consider the costs and revenues associated with an individual product, service, project or customer over the full duration of all the stages of its life, from development to eventual decline. This is in contrast with the traditional approach where an organisation takes information on costs and revenue information into account for individual financial years in isolation.

Now study the following section in P2 chapter 7 of your bespoke BPP reader and attempt the activities:

Section	Heading
2	*Life cycle costing* (Leave 2.7 for later.)

Activity 2.1

Bonolo's Bliss (Pty) Ltd. has recently developed and launched an innovative and unique new product, which the organisation plans to manufacture and sell in addition to its other products. The estimated duration of the new product's life cycle is just less than a year.

Bonolo's Bliss (Pty) Ltd. applies life cycle costing, which consists of the development, introduction, growth, maturity and decline stages that Bonolo, the owner, learnt about in MAC3703.

In the introductory stage of the new product, Bonolo's Bliss (Pty) Ltd. has only produced and sold a few units of the new product and at the same time experienced very high fixed costs. However, Bonolo expects huge growth in sales volumes for the growth stage based on the very positive results of thorough market research in the development stage of the new product.

REQUIRED

For each of the **maturity** and **decline** stages of the new product's life cycle, explain what Bonolo should expect as likely changes from the preceding stage with regard to the following:

- sales volumes
- behaviour and size of production costs in total and per unit

(*Adapted from CIMA, P2, May 2011 and September 2010*)

Solution to activity 2.1

Maturity stage

Compared to the growth stage, the likely changes are as follows:

Sales volumes:

- Whereas the growth stage was likely to involve a rapid increase in sales volumes, these volumes are now expected to settle at a high volume in the maturity stage. The product would have become established in the market place. This is a time for consolidation, and while there may be occasional offers to tempt customers to buy the product, sales volumes can be expected to be relatively stable during this period.

Behaviour and size of costs:

- Where some fixed costs were likely to increase in total in the growth stage, total fixed costs will now reach a plateau (become "fixed"). Non-current assets (fixed costs) should be mostly in place now (after the growth stage) to enable Bonolo's Bliss (Pty) Ltd. to manufacture enough products to meet the demand and are not expected to increase substantially in the new stage. Due to stabilised sales volume and total fixed costs, fixed manufacturing costs **per unit** are not expected to change significantly from the end of the growth stage to the maturity stage.
- No significant change in overhead costs per unit are expected from the end of the growth stage to the maturity stage, as Bonolo's Bliss (Pty) Ltd. should have established optimum batch sizes by now and are more likely to be able to apply these batch sizes in the maturity stage due to simplified demand prediction during this stage.
- The variable costs that were likely to increase in total due to higher sales volumes but decrease per unit in the growth stage, would now stabilise in the maturity stage due to economies of scale, the learning curve effect and the experience curve reaching their limits. Therefore, relatively stable total variable costs (direct materials, direct labour and manufacturing overheads) can be expected due to the settling of sales volumes and variable cost per unit.
- An example of stabilising variable costs (in total and per unit) would be direct material costs. These costs might even, in some circumstances – depending on the efficiencies achieved – increase slightly from the growth stage as smaller quantities of direct materials could be required in the maturity stage and this could result in Bonolo's Bliss (Pty) Ltd. losing some of its bargaining power.

Decline stage

Compared to the maturity stage, the likely changes are as follows:

Sales volumes:

- Whereas the maturity stage was likely to involve the stabilisation of sales volumes, these volumes are expected to fall in the decline stage. The product may have been replaced in the market by a more technologically advanced product, leading to a drop in the demand for the product.

Behaviour and size of costs:

- Where fixed costs were likely to be relatively stable in the maturity stage, fixed costs in total may start to increase again in the decline stage as a result of decommissioning and/or other fixed retirement and disposal costs to be incurred closer to the end of the product's life cycle. Also, as demand declines, fixed production costs will be shared by fewer units, which will result in higher fixed production costs per unit.
- Variable costs in total are now expected to decrease as a result of lower expected demand, which will lead to Bonolo's Bliss (Pty) Ltd. producing fewer units of the product than before.
- Where variable costs per unit were expected to be quite stable during the maturity phase, they could, however, increase in the decline stage. For instance, direct material costs per unit may increase from the maturity stage as even smaller quantities of direct materials are now required due to smaller sales volumes, which could result in Bonolo's Bliss (Pty) Ltd. losing its remaining bargaining power to negotiate low prices from its suppliers or losing discounts based on bulk orders.
- Smaller batch sizes due to the decline in demand could increase the variable manufacturing overhead costs per unit.
- The expected increase in variable costs per unit, which on its own would lead to an increase in total variable costs, will offset the decrease in total variable costs resulting from lower sales volumes to some extent.

Did you notice that we also discussed the effect on different production cost classifications (direct materials/manufacturing overheads)? The amount of detail required from an answer can usually be determined by the number of marks allocated to the question. Here we have not allocated marks to the question, but we tried to give a relatively comprehensive solution for learning purposes.

Note:

You will learn more or have learnt more about learning curves in MAC3701.

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3. Target costing, value analyses and functional analyses

The section you are going to study now will cover techniques that businesses use to determine which functions and processes add value to the customer. These in turn determine which costs

will be incurred in the production of the product and the upper limits that the costs could reach, whilst still ensuring the organisation makes a profit on the product.

Now study the following sections in P2 chapter 7 of your bespoke BPP reader and attempt the activities:

Section	Heading
3	*Target costing*
4	*Value analyses*
5	*Functional analyses*

Activity 2.2

Answer question 7.6 in P2 chapter 7.

Solution to activity 2.2

Find the solution to question 7.6 in P2, at the end of chapter 7.

Note:

As part of a target costing approach, target costs should be revised much more frequently than standards should be as part of a standard costing approach. This is because of the requirement that target costs should be reduced on a continuous basis.

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Activity 2.3

Answer question 7.7 in P2 chapter 7.

Solution to activity 2.3

Find the solution to question 7.7 in P2, at the end of chapter 7.

Note:

An organisation can possibly increase the exchange value of a product by enhancing its use value and/or esteem value, as improving the quality and usefulness of the product might increase the price buyers would be willing to pay for it in the market.

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Activity 2.4

Answer question 7.8 in P2 chapter 7.

Solution to activity 2.4

Find the solution to question 7.8 in P2, at the end of chapter 7.

Reflection

Did you notice that a value analysis programme benefits both the customer and the supplier?

Activity 2.5

Tydvlieg (Pty) Ltd. manufactures insect-shaped wall clocks for children. Each of the clocks has a traditional analogue clock (which indicates the time by means of clock-hands), a barometer (which measures the air pressure in the child's room), a thermometer (which measures the temperature in the room) and a digital light meter (which measures the amount of light in the room). The clock can also serve as an alarm clock that imitates the sound of the specific insect depicted by the clock shape.

Tydvlieg (Pty) Ltd. uses functional analysis as a cost-planning tool.

REQUIRED

a. Draw a functional family tree for the five functions of the clock described above. Use "part name", "function verb" and "function noun" as your column headings.

b. Assume the target selling price of the clock is R360, the required gross profit percentage is 16,667%, and market research has shown the following relative values for each of the parts

of the clock. Calculate the target cost for each function. Round off rand amounts to two decimal places.

Part name	**Portion of total value of product to customers**
Analogue clock	40%
Barometer	5%
Thermometer	20%
Light meter	10%
Alarm	25%

c. If the barometer part of the product can currently be produced at R40 per wall clock, would you advise Tydvlieg (Pty) Ltd. to reduce costs if they wanted to keep on manufacturing the clocks with the same features as before? Motivate your answer.

d. Assume that Tydvlieg (Pty) Ltd. is unable to save costs on the barometer, but can add the feature of a sound level meter (which measures the level of noise in the child's room) to the current clock design at a cost of R10 per meter. A value analysis has indicated that they will be able to charge 12% more for a wall clock than before. Calculate the net amount by which the gross profit per clock will improve. Round off rand amounts to two decimal places.

Solution to activity 2.5

a. Functional family tree

Part name	**Function verb**	**Function noun**
Analogue clock	Indicates	time
Barometer	Measures	pressure
Thermometer	Measures	temperature
light meter	Measures	light
Alarm	Makes	sound (at specific time)

b. Calculating target cost in total

360 x (100 – 16,667) / 100
= R300
Target cost per function

Function	Target cost calculation
Indicates time	40/100 x R300 = R120
Measures pressure	5/100 x R300 = R15
Measures temperature	20/100 x R300 = R60
Measures light	10/100 x R300 = R30
Makes sound (at specific time)	25/100x R300 = R75
Total	R300

c. Yes, I would advise Tydvlieg (Pty) Ltd. to reduce costs, as the production cost of the barometer (R40) exceeds the target cost of the function it performs (R15).

Using functional analysis, Tydvlieg (Pty) Ltd. would be concerned with improving profits by

- reducing costs and/or
- adding features to products to improve them

If the organisation cannot change the features of the clock, they will have to reduce its cost. Tydvlieg (Pty) Ltd. could consider using alternative production methods or alternative direct materials to reduce costs.

d. Selling price per clock without sound level meter
= R360 (given)

Selling price per clock with sound level meter
= R360 x 1,12
= R403,20

Thus, if the sound level meter is added, the increase in selling price will be

R403,20 – R360 = R43,20 (or 12% of R360)

The increase in cost will be R10 if the sound level meter is added.

The net increase in gross profit per wall clock will thus be R43,20 – R10 = R33,20.

Alternative: New gross profit = R403,20 – (R300 + R10) = R93,20
Net increase in gross profit per wall clock = R93,20 – R60 = R33,20

Did you notice that we did not need to know what the actual total production cost per clock was? This is in line with the incremental approach to relevant costing that you studied in MAC2601.

Adding the feature of a sound level meter will also influence the relative value of each function to the (new) target cost. Suppose the relative values of the functions to the target cost will now be as follows:

Function	**Relative value**
Indicates time	36%
Measures pressure	4,5%
Measures temperature	18%
Measures light	9%
Makes sound (at specific time)	22,5%
Measures noise level	10%

The new target cost total will be as follows:

403,20 (new selling price) – 16,667/100 x 403,20
= 403,20 – 67,20
= R336 (or R403,20 x 83,333%)

The new target cost per function will thus be as follows:

Function	**Target cost calculation**
Indicates time	36/100 x 336 = R120,96
Measures pressure	**4,5/100 x 336 = R15,12**
Measures temperature	18/100 x 336 = R60,48
Measures light	9/100 x 336 = R30,24
Makes sound (at specific time)	22,5/100 x 336 = R75,60
Measures noise level	10/100 x 336 = R33,60
Total	R336

Did you notice that the target cost of the barometer function has increased to R15,12? However, the target cost of the barometer function is still way below the the R40 associated cost expected

for it. The organisation should perhaps determine what the anticipated effect of the removal of the barometer as a product feature from the original clock design and the replacement thereof by the sound level meter would be.

Note:

In section 5 on functional analysis in P2 chapter 7 of your bespoke BPP reader, the possible use of Activity Based Costing (ABC) in functional analysis is explained. You learnt about ABC in your MAC2601 studies. Please revisit your MAC2601 study material if you cannot remember how to apply ABC in a given scenario.

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4. Environmental costing

One of the newer developments in costing is environmental costing. Society at large is expecting organisations to respect the environment in which they operate and to reduce their environmental footprint. It is becoming increasingly important to shareholders and other stakeholders that organisations report on environmental costs and measures instituted to make the organisation's operations environmentally friendly. You will learn more about the key measures that are reported externally in topic 5, when we cover sustainability. This section is concerned with calculating the costs of organisational resources spent on minimising the environmental footprint. In some instances, additional plant and/or equipment installed can be very expensive, and these costs should be incorporated into the production cost of the products (and recovered in the selling price). It is therefore important that the organisation identify all the costs correctly.

Now study the following sections in P1 chapter 12 of your bespoke BPP reader and attempt the activities:

Section	Heading
1	*The importance of environmental costs*
2	*Environmental footprints*
3	*Types of cost*

Activity 2.6

Explain why saving energy should be an important consideration for a business from an environmental costing perspective and suggest three ways in which a business can reduce the energy consumption of its administrative offices.

Solution to activity 2.6

Energy consumption leads to carbon emissions, which contribute to climate change. Climate change threatens the future of the earth. From an ethical perspective, it is important for a business to minimise the negative impact on the environment and to help protect the earth. Therefore, a business can decrease its environmental footprint by saving energy, and thereby reduce the negative effect of its operations on the environment.

Because of the increased awareness of the relationship between businesses and the environment, saving energy could also improve the reputation of a business should the public become aware of the energy saving attempts of the business.

In some jurisdictions, the energy usage might also be capped by laws, policies or regulations, etc., and non-compliance with these can lead to increased costs for businesses, which can lead to a decrease in profits.

Furthermore, energy savings usually lead to cost savings for a business, which can lead to an increase in profits.

A business could, for example, reduce the energy consumption of its administrative offices by requiring that the employees at these offices shut their office windows when the air conditioning is in use. Another way of saving energy at these offices could be to install lighting systems which monitors entry into certain areas at certain times, especially at night, and which only switches on a relevant area's lights when it picks up movement in the specific area. Regular maintenance on heating, lighting and other equipment would enable the equipment to remain efficient and would thereby decrease energy consumption by reducing energy wastage.

Note:
The reduced energy consumption can lead to a reduced environmental footprint, which in turn can lead to cost savings and, therefore, increased profits.
……..

Now study the following sections in P1 chapter 12 of your bespoke BPP reader and attempt the activities:

Section	Heading
4	*Environmental cost accounting*
5	*Environmental costing using ABC*

Activity 2.7

Answer question 12.1 in P1 chapter 12.

Solution to activity 2.7

Find the solution to question 12.1 in P1, at the end of chapter 12.

5. Backflush accounting

The previous sections covered techniques for including ever more costs in the amount at which inventory is valued, or which is covered in the profit mark-up charged to customers. Backflush accounting attempts to do the opposite of that in a **JIT environment** where minimal inventory is kept. One of the advantages of backflush accounting is that it can lead to **simplified recordkeeping**, whereas the other techniques lead to increased and more complex recordkeeping.

Now study the following section in P1 chapter 10 of you bespoke BPP reader:

Section	Heading
3	*Backflush accounting*

Also study the following section in P2 chapter 9A of your bespoke BPP reader and attempt the activity:

Section	Heading
8	*Accounting for pull systems – backflush accounting*

Activity 2.8

Ndlovu Builders (Pty) Ltd. uses JIT production and purchasing systems. It is considering whether to implement a backflush costing system instead of the traditional costing system that it is currently using.

In March 20X7, Ndlovu Builders (Pty) Ltd. purchased and used direct materials with a total cost of R3 000 000. These materials are purchased and received in batches of the required size as close as possible to the time when they are required in production. Assume that the actual direct material cost per unit for March did not differ from the standard cost per unit of direct material determined for February, March or April 20X7.

Ndlovu Builders (Pty) Ltd. also incurred labour costs of R2 000 000 and overheads of R1 500 000 in March in the process of manufacturing cement.

Ndlovu Builders (Pty) Ltd. decided that if they implemented backflush costing, they would

- not use the receipt of materials as a trigger point for accounting entries
- use the timing of the completion of goods as a trigger point
- record actual conversion costs as incurred, but apply conversion costs at a standard cost of R7,50 per unit to goods when they are completed
- include all manufacturing labour and production overheads in a single conversion cost account

The following information pertains to the cement sales orders that Ndlovu Builders (Pty) Ltd. prepared:

- Orders from customers for 488 000 bags of cement were both prepared and dispatched in March 20X7.
- They prepared orders for another 12 000 bags of cement close to the end of March, but could only dispatch these on 1 April 20X7.
- They prepared orders for 10 000 bags of cement close to the end of February, but could only dispatch these on 1 March 20X7.

Ndlovu Builders (Pty) Ltd. recognises sales revenue when an order is dispatched. The sales value of orders dispatched in March 20X7 was R8 000 000.

REQUIRED

a. Calculate the direct material cost standard per unit for March 20X7.

b. Prepare the single process account for March 20X7 that would apply if they implemented backflush accounting.

c. Prepare the accounting entries of Ndlovu Builders (Pty) Ltd. for March 20X7 if they used a backflush accounting system. You don't need to provide any dates, descriptions or closing entries.

d. Name one advantage that Ndlovu Builders (Pty) Ltd. may benefit from should they implement backflush accounting.

Solution to activity 2.8

a. Direct material cost standard per unit

Total direct material costs	R3 000 000
Divided by: Units (bags of cement) produced in March 20X7[1]	500 000
Actual direct material cost per unit for March 20X7	R6

[1] 488 000 + 12 000 = 500 000 (The 10 000 bags prepared in February should not be subtracted here, as they have already been excluded from the 488 000 bags that were both prepared and dispatched in March 20X7.)

As the question states that the standard direct material cost for March 20X7 will be the same as the actual direct material cost per unit for March 20X7, the standard cost for direct material for March 20X7 will be R6.

b. Single process account for backflush accounting

	Dr	**Cr**
Materials	3 000 000	
Conversion costs (R7,50 x 500 000)	3 750 000	
To finished goods (R13,50 x 500 000)		6 750 000
	6 750 000	6 750 000

Note:

Inventory, including WIP, will be immaterial in a JIT system, and the WIP control account will be redundant if backflush accounting is used.

……..

c. Accounting entries for the backflush accounting system

	Dr	**Cr**
Conversion cost control	3 500 000	
Bank/Accounts payable		3 500 000
(R2 000 000 + R1 500 000)		
Material cost control	3 000 000	
Bank/Accounts payable		3 000 000
Process account	6 750 000	
Material cost control		3 000 000
(R6 x 500 000)		
Conversion cost control		3 750 000
(R7,50 x 500 000)		
Finished goods	6 750 000	
(R13,50 x 500 000)		
Process account		6 750 000
Bank/Accounts receivable	8 000 000	
Sales revenue		8 000 000
Cost of Sales	6 723 000	
Finished goods		6 723 000
([488 000 + 10 000] x [R6 + R7,50])		

Conversion cost control (3 750 000 – 3 500 000)	250 000	
Material cost control (3 000 000 – 3 000 000)	-	
Cost of sales		250 000

d. One advantage of backflush accounting

The backflush costing system will provide a much more straightforward and shorter alternative to the traditional costing system, with fewer accounts and fewer accounting entries.

6. Summary

Please see the chapter roundup at the end of every chapter referred to (after the text, but before the quick quiz questions) for a brief summary of the concepts discussed in this study unit.

In this study unit, you learnt to

- explain, describe and discuss various modern costing techniques, such as life cycle costing, target costing, value analysis and functional analysis
- contrast target costs with standard costs
- compare and contrast value analysis with functional analysis
- explain environmental costing and apply environmental costing principles in the identification of environmental costs and the quantification of environmental impacts
- explain backflush accounting and the use thereof when material and process WIP is minimal
- prepare journal entries based on the trigger points in the backflush accounting system

In the next study unit, we will focus our attention on cost management approaches that can lead to continuous quality improvement in the modern business environment.

SELF-ASSESSMENT THEORY REVIEW QUESTIONS

After working through all the relevant sections in the reader, as well as the guidance and activities provided in this study unit, you should now be able to attempt the following self-

assessment theory review question and the self-assessment question below the theory question.

THEORY QUESTION 3

Answer question 18 in the exam question bank of P2.

SOLUTION TO THEORY QUESTION 3

Find the solution to question 18 in the exam answer bank of P2.

SELF-ASSESSMENT QUESTIONS

Now answer the following self-assessment question:

QUESTION 2

a. Answer quick quiz questions 1 to 5 at the end of P1 chapter 12.

b. Answer question 20 in the exam question bank of P1.

SOLUTION TO QUESTION 2

a. Find the solutions to quick quiz questions 1 to 5 directly after the quick quiz in P1 chapter 12.

b. Find the solution to question 20 in the exam answer bank of P1.

STUDY UNIT 3 CONTINUOUS QUALITY IMPROVEMENT

1. Introduction

In the previous study unit, various modern costing techniques were discussed. An organisation can also apply many of the costing techniques discussed in study unit 2 in its quest for continuous improvement, for instance target costing (refer back to step 2 of the target costing process as explained in section 3 on target costing in P2 chapter 7 of your BPP reader. To satisfy the changing demands of customers, **quality rather than quantity** has become the focus, so various continuous quality-driven modern cost management approaches have been developed which will be discussed in this study unit.

We base this study unit on **selected sections** from the following chapters in your bespoke BPP reader:

- chapter 9 of P1
- chapter 9A of P2

2. Total quality management (TQM)

The TQM philosophy includes the principles involved and the techniques applied to ensure that quality products and services are provided that meet or exceed customer expectations. To be effective, the TQM philosophy should be applied throughout the organisation.

Linked to TQM is the principle of world-class manufacturing (WCM). Now study the following section in P1 chapter 9 of your bespoke BPP reader:

Section	Heading
6	*Total quality management (TQM)*

Also study the following section in P2 chapter 9A of your bespoke BPP reader and attempt the activities:

Section	Heading
2	*Total quality management (TQM)*

Note:

There is some overlap between some of the sections from P1 and P2, but with added views. It will be to your benefit to study the whole section again, as it will reinforce these important principles.

……..

Activity 3.1

List the nine key elements of TQM.

Solution to activity 3.1

Refer to P2 chapter 9A, section 2.3.

Activity 3.2

Explain what you regard as the most important differences between a standard costing system and TQM.

Solution to activity 3.2

In a standard costing system, the focus is on the calculation of cost and efficiency variances once production and sales have taken place. It measures manufacturing costs, including manufacturing overheads. Standard costing is therefore a **measurement system**. TQM is a **philosophy**. In TQM, the focus is on quality control in every aspect of the organisation, from the design of products and services to the sales and customer response. In a manufacturing organisation, the quality control on goods received from suppliers and those manufactured will also be included. The TQM philosophy is that avoiding wastage and mistakes is more cost effective than trying to correct them afterwards when discovered at the inspection point or through customer complaints (see chapter 9, section 6.8; chapter 9A, sections 2.1, 2.2, 2.4, 2.5, 2.8 and 2.9).

Note:

Certain costs of quality, like prevention and detection costs, will form part of the production overheads and will therefore be included in the cost to get the units produced into their current condition and location. Therefore, these costs should qualify to be included in inventory costs and to be built into the standard cost of a unit of production.

……..

Enrichment activity 3.3

Answer questions 9A.3 and 4 in P2 chapter 9A.

Certain costs of quality, like prevention and detection costs, will form part of the production overheads and will therefore be included in the cost to get the units produced into their current condition and location. Therefore, these costs should qualify to be included in inventory costs and to be built into the standard cost of a unit of production.

……..

Solution to enrichment activity 3.3

Find the solution to questions 9A.3 and 4 in P2, at the end of chapter 9A.

Reflection

Have you noticed that the TQM philosophy of getting it right first time and continual improvement affects all employees in the organisation, not only those working on the production line? Can you see the benefits of TQM for customer satisfaction?

……

3. Cost of quality: concept and reports

This section will cover the measurement and reporting of the financial implications of quality, including the costs of conforming to quality standards as well as those of non-conformance. The cost of quality report is a very important management report.

Now study the following section in P1 chapter 9 of your bespoke BPP reader:

Section	Heading
7	*Costs of quality and cost of quality reports*

Also study the following section in P2 chapter 9A of your bespoke BPP reader and attempt the activities:

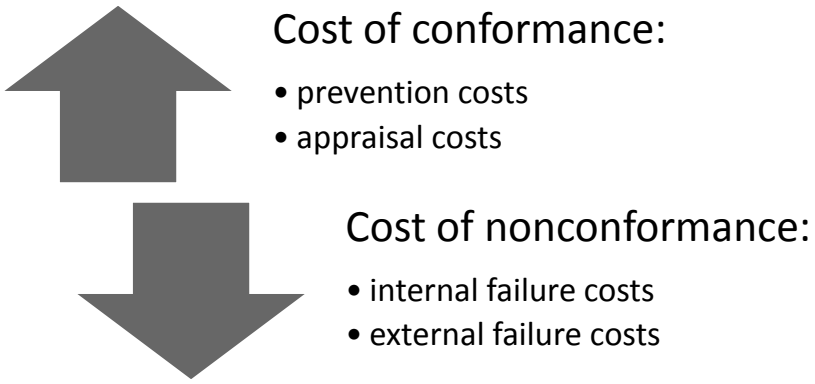
Section	Heading
3	*Costs of quality and cost of quality reports*

Note:

There is some overlap between some of the sections from P1 and P2, but with added views. It will be to your benefit to study the whole section again, as it will reinforce these important principles.

……..

Summary of cost of quality concepts reported on in the cost of quality report:



Note:

From the illustration above, you can see that by increasing spending on cost of conformance, cost of non-conformance should decline. The old adage applies: "Prevention is better than cure."

……..

Activity 3.4

Answer question 9A.5 in P2 chapter 9A.

Solution to activity 3.4

Find the solution to question 9A.5 in P2, at the end of chapter 9A.

Do you see that the costs of quality are measured and financially reported on to quantify the concept that good product quality saves money in an organisation, whereas poor product quality costs money? Do you understand the interaction between costs of conformance and costs of non-conformance?

4. Continuous improvement (CI), Kaizen costing and business process re-engineering (BPR)

Reporting on quality in the organisation is only one aspect of TQM. The philosophy of TQM goes hand in hand with continually improving the quality of processes and thereby reducing costs whilst maintaining the quality of the product. Sometimes, a total rethink of the process flows is required. The section you are going to study now will explain how employees at various levels in organisations can initiate continuous improvements which add value to the customer while also reducing costs.

Now study the following sections in P2 chapter 9A of your bespoke BPP reader and attempt the activities:

Section	Heading
4	*Continuous improvement*
5	*Kaizen costing*
6	*Business process re-engineering (BPR)*

Activity 3.5

Read the following CIMA study note online by typing the following URL into your browser and pressing enter:

http://www.cimaglobal.com/Documents/Student%20docs/2010%20syllabus%20docs/P2/P2%20Kaizen%20Costing.pdf (accessed on 11 June 2013)

Did you notice how Kaizen costing differs from standard costing?

Activity 3.6

Answer the following questions based on Hammer's seven principles of BPR performance (Hammer 1990)[1], as also set out in section 6.2 of P2 chapter 9A of your bespoke BPP reader:

a. Complete the following sentence: An organisation performed a certain accounting task for several years. On closer investigation, management found that this task was completely unnecessary, as it did not really address the risk it was supposed to mitigate. A new process would be designed focusing on achieving the desired _____ of mitigating the risk involved.
b. Which of Hammer's principles of BPR is applied in the following scenario: The Johannesburg head office of an organisation in the automotive industry negotiates an additional beneficial-price contract with the supplier of its Gauteng workshops so that its remote workshops in Springbok and Dutywa will also benefit from quantity discounts when they order parts from the supplier.
c. Suppose the automotive organisation in question b. above has a system in place whereby the vehicle repairs staff at its Dutywa workshop can order parts from head office online when needed, and that the online system automatically places the specific order at the supplier on the simple click of an authorisation button at head office. List at least three of Hammer's seven principles which this system is likely to incorporate and explain why you think the system will incorporate each of these principles.

Solution to activity 3.6

a. …outcome…
b. We should treat resources that are geographically scattered as though they were centralised.
c. i. **A process should be performed by those personnel who will use the process output.** The workers, who repair the vehicles and will use these parts, will order the required parts themselves.
   ii. **We should include information processing in the work by which the information is generated.** The workers who repair the vehicles will determine which parts are needed and will process the information in this regard on the online ordering system.

[1] Hammer, M. 1990. Reengineering work: don't automate, obliterate. *Harvard Business Review*, July/August: 108-112.

iii. **The person who does the work should be allowed to manage himself/herself.** The workers who carry out the actual repairs in Dutywa are also managers when they manage the ordering function of the Dutywa workshop.

iv. **We should capture information at its source and once only.** Head office will not have to recapture the information about the parts that the workers at Dutywa require – this information will be sent electronically from Dutywa to head office and from head office to the supplier when authorised.

5. Summary

Please see the chapter roundup at the end of every chapter referred to (after the text, but before the quick quiz questions) for a brief summary of the concepts discussed in this study unit.

In this study unit, you learnt to:

- describe and explain the characteristics and concepts of various quality management and improvement techniques
- calculate the costs of quality and prepare cost of quality reports
- contrast TQM and Kaizen costing approaches with a standard costing approach

In the next study unit, we will address the theory of constraints (TOC) as a means of improving the capacity utilisation of a plant.

SELF-ASSESSMENT THEORY REVIEW QUESTIONS

After working through all the relevant sections in the reader, as well as the guidance and activities provided in this study unit, you should now be able to attempt the following self-assessment theory review questions.

THEORY QUESTION 4

Answer the following quick quiz questions:

a. Questions 5, 6 and 9 at the end of P1 chapter 9.

b. Questions 8, 9 and 11 at the end of P2 chapter 9A.

SOLUTION TO THEORY QUESTION 4

a. Find the solutions to quick quiz questions 5, 6 and 9 directly after the quick quiz in P1 Chapter 9.

b. Find the solutions to quick quiz questions 8, 9 and 11 directly after the quick quiz in P2 Chapter 9A.

THEORY QUESTION 5

Answer question 14 in the exam question bank of P1.

SOLUTION TO THEORY QUESTION 5

Find the solution to question 14 in the exam answer bank of P1.

STUDY UNIT 4 OPTIMISING THROUGHPUT AND CONTRIBUTION

1. Introduction

In the previous study unit, various modern management approaches for continuous quality improvement were described and explained. In this study unit, we will focus on modern techniques for improving the throughput of the plant and thereby improving the contribution generated.

We base this study unit on **selected sections** from the following chapters in your bespoke BPP reader:

- chapter 10 of P1
- chapter 9A of P2

2. Theory of constraints (TOC)

In this section, it will be explained how to address production/service-delivery bottlenecks in an organisation to achieve as much throughput (and therefore also throughput contribution) as possible, to minimise inventory levels at the different stages of the manufacturing process and to reduce plant idle time.

You have been introduced to bottlenecks (limiting factors/constraints) in your MAC2601 studies. When you study the sections below, please be aware of how these sections relate to what you learnt in MAC2601.

Now study the following section in P1 chapter 10 of your bespoke BPP reader:

Section	Heading
1	*The theory of constraints (TOC)*

Also study the following section in P2 chapter 9A of your bespoke BPP reader and attempt the activities:

Section	Heading
9	*The theory of constraints (TOC)*

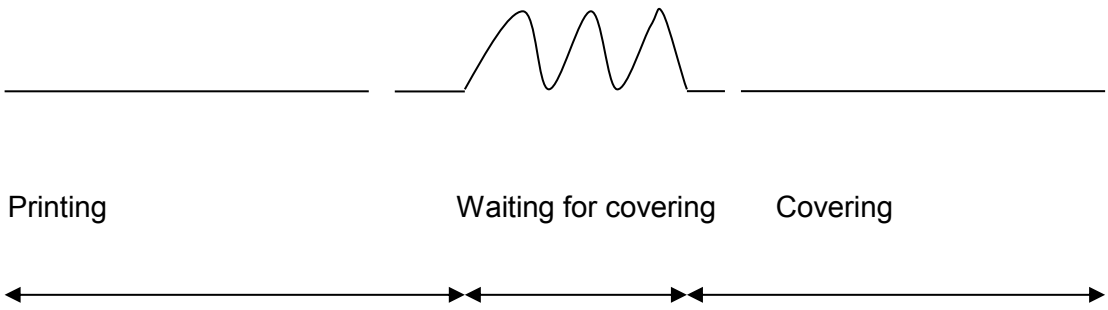
Activity 4.1

Cushions and Couches (Pty) Ltd. supplies many Southern African hotels with furniture for their lounges and bedrooms.

Cushions and Couches (Pty) Ltd. owns a machine that is capable of covering the furniture and accessories with fabric at a rate of 100 square metres of printed fabric per hour. The printed fabric input comes from a printing machine, which prints the logos of and patterns required by the relevant hotels at a rate of 120 square metres of fabric per hour.

Rolls of unprinted fabric are only available in sizes of 54 square metres each, and these rolls are fed into the printing machine one-by-one and on a continuous basis. As soon as a portion of a roll reaches the end of the printing process (this happens on a continuous basis), it automatically moves through to the covering machine. However, if the covering machine is still occupied with another roll, it waits in the covering machine's temporary storage area.

The following is a simplified illustration of three rolls in the production process:



REQUIRED

Calculate the maximum size of the backlog printed rolls that will build up in the temporary storage area of the covering machine if Cushions and Couches (Pty) Ltd. need to cover furniture with 240 rolls of printed fabric for a specific contract. You can ignore the timing difference between the start of the printing process and the feeding of the specific section of the roll of printed fabric into the covering machine.

Solution to activity 4.1

54 x 100/120 = 45. For each roll, 54 – 45 = 9 square metres of fabric has to wait in the storage area of the covering machine after being printed.

If 240 rolls are being printed, this means that the backlog would be:

240 x 9 = 2 160 square metres. This equals 2 160/54 = 40 rolls of printed fabric that will have to be stored in the temporary storage unit.

Note:

The backlog would lead to storage-related costs for the fabric that has been printed but cannot yet feed into the covering machine.

……..

Alternative 1:

In the first hour of operation of the printing machine, 120/54 = 2,22 rolls (rounded off) will be printed, whilst the remaining portion of 0,78 of the third roll will only feed through in the second hour of operation of the printing machine. As soon as a section of the fabric has fed through the printing machine, it will feed through to the covering machine. (We ignore the timing difference between the start of the printing process and the feeding of the specific section of the roll of printed fabric into the covering machine.) The covering machine will only be able to use 100/120 x 2,22 = 1,85 rolls in its first hour of operation (or 100/54 = 1,85). The remaining 2,22 – 1,85 = 0,37 rolls (or 0,37 x 54 = 20 square metres (rounded off)) will have to wait in the temporary storage unit as backlog.

240 rolls of fabric will take 240 x 54/120 = 108 hours of printing time. Therefore, the total backlog will be 108 x 0,37 = 40 rolls (rounded off).

Alternative 2:

As calculated before, 240 rolls of fabric will take 240 x 54/120 = 108 hours of printing time. Therefore, the backlog can also be calculated as:

240 – (108 x 100/54)
= 240 – 200
= 40 rolls

Alternative 3:

The backlog will be proportionate to the tempo (throughput) difference between the two machines:

240 rolls x (120 – 100)/120 = 40 rolls

3. Throughput accounting (TA)

The section you are going to study next will explain TA, which focuses on maximising throughput whilst keeping inventory levels as low as possible and ensuring that any increases in costs lead to improved effectiveness. TA will also be compared to conventional cost accounting. Its relationship with a JIT environment and with managing bottleneck constraints will also be discussed.

Now study the following section in P1 chapter 10 of your bespoke BPP reader:

Section	Heading
2	*Throughput accounting (TA)*

Also study the following section in P2 chapter 9A of your bespoke BPP reader and attempt the activities:

Section	Heading
10	*Throughput accounting (TA)* (the introduction and from section 10.4 onwards, because the text in sections 10.1 to 10.3 has been repeated from P1 chapter 10)

Activity 4.2

Answer questions 10.1 – 5 in P1 chapter 10.

Solution to activity 4.2

Find the solutions to questions 10.1 – 5 in P1, at the end of chapter 10.

Activity 4.3

Answer question 9A.12 in P2 chapter 9A.

Solution to activity 4.3

Find the solution to question 9A.12 in P2, at the end of chapter 9A.

Did you notice that conversion costs play a very important role in TA? For the purposes of TA in MAC3703, conversion costs will include manufacturing labour plus manufacturing overheads, as in your MAC2601 studies.

4. Summary

Please see the chapter roundup at the end of every chapter referred to (after the text, but before the quick quiz questions) for a brief summary of the concepts discussed in this study unit.

In this study unit, you learnt to

- compare and contrast marginal TA with absorption accounting in their approaches to profit reporting and inventory valuation
- explain, describe and discuss TA and the TOC as modern costing techniques and evaluate the effect of the TOC on inventories, efficiencies and costs

In the next study unit, we will attend to the value chain and related concepts and see why value chain analysis is important for the competitive advantage of an organisation. Furthermore, we will consider supply chain management, outsourcing and other more externally-focused approaches that an organisation can follow in managing its costs.

SELF-ASSESSMENT THEORY REVIEW QUESTIONS

After working through all the relevant sections in the reader, as well as the guidance and activities provided in this study unit, you should now be able to attempt the following self-assessment theory review question and the self-assessment question below this theory question.

THEORY QUESTION 6

Answer quick quiz question 10 at the end of P2 chapter 9A.

SOLUTION TO THEORY QUESTION 6

Find the solution to quick quiz question 10 directly after the quick quiz in P2 Chapter 9A.

SELF-ASSESSMENT QUESTIONS

Now answer the following self-assessment question:

QUESTION 3

Answer quick quiz questions 1 and 2 at the end of P1 chapter 10.

SOLUTION TO QUESTION 3

Find the solutions to quick quiz questions 1 and 2 directly after the quick quiz in P1 Chapter 10.

STUDY UNIT 5 MORE EXTERNALLY-FOCUSED MANAGEMENT APPROACHES FOR A COMPETITIVE ADVANTAGE

1. Introduction

In the previous study units, you learnt about modern cost management approaches that could improve the efficiency and competitiveness of an organisation. Whereas these approaches placed emphasis on internal factors, such as efficiencies in the production process, the approaches discussed in the current study unit place more emphasis on collaboration with role players outside the organisation. Although many of the other developments and approaches discussed, for instance JIT, can also only be successful if the organisation collaborates very closely with its suppliers and customers, the explanations of the approaches below contains explicit reference to customers, processes, subcontractors and/or suppliers outside the organisation, i.e. external parties.

This study unit is based on **selected sections** from the following chapter in your bespoke BPP reader:

- chapter 9B of P2

2. The value chain

This section will explain what the value chain is and how an organisation can manage it to create value, which in turn can lead to increased profit for the organisation.

Now study the following section in P2 chapter 9B of your bespoke BPP reader and then attempt the activities:

Section	Heading
1	*The value chain*

Activity 5.1

Answer questions 9B.1 and 2 in P2 chapter 9B.

Solution to activity 5.1

Find the solutions to questions 9B.1 and 2 in P2, at the end of chapter 9B.

Did you notice how value chain analysis and management differ from traditional management accounting approaches in its focus and other areas? Do you realise the important part that different **activities** play in creating value? The value chain approach also ties in with BPR in that all business processes are focused on delivery value for the customer. Non-value adding activities are eliminated.

3. Supply chain management (SCM)

The section that you are going to study next will explain the supply chain and the management of this chain so that it can function as well as possible despite challenges and limitations. The supply chain focuses on the processes required from outside the organisation, but in collaboration with the organisation.

Now study the following section in P2 chapter 9B of your bespoke BPP reader and then attempt the activities:

Section	Heading
2	*Supply chain management*

Activity 5.2

Answer the following questions:

a. List two alternative terms for "supply chain management".

b. Name two risks that can be associated with inventory shortages in a manufacturing organisation.

c. Suggest three methods by which an organisation can strengthen or maintain its relationship with its key suppliers.

d. When will an activity succeed in adding value to the supply chain?

Solution to activity 5.2

a. i. pipeline management
   ii. value-stream management
b. i. The risk of not being able to meet customer orders timeously.
   ii. The risk of production being interrupted due to important inputs not being in stock.
c. i. Developing a relationship of **co-dependency** with a supplier, whereby the supplier commits resources to the organisation, while the organisation in turn commits to buy from the specific supplier only.
   ii. Rewarding its suppliers when they meet the targets that the organisation has set using target costing techniques.
   iii. Setting up or improving personal ties by forming teams with members from both the supplier and the buying organisation.
d. When the amount of value added by the activity is greater than the amount it cost to create the value.

Activity 5.3

A smoothie-making shop in a large shopping centre gets a request from a customer to have beetroot added to a smoothie on the menu. The shop does not have beetroot in stock, nor does it usually have beetroot as an ingredient of any of the smoothies on its menu.

The smoothie-making shop has a good relationship with the next door supermarket. The manager of the smoothie-shop can simply phone the manager of the vegetable section of the supermarket, who in turn can organise one of the shop attendants to quickly deliver any quantity of a specific fruit or vegetable that they have in store.

The smoothie-shop manager is aware that the staff of its competitor on the first floor has been instructed not to allow any variations on their menu.

REQUIRED

a. Discuss a possible benefit for the smoothie-making shop of meeting the customer's request.

b. Explain how the smoothie-shop manager can add value to his business by adding beetroot to the standard smoothie on the customer's request.

Solution to activity 5.3

a. Increased customer satisfaction: if the customer's special request for beetroot to be added to his/her smoothie is met without it taking too long for the beetroot to be ordered and delivered, he/she may be more likely to return to the specific shop than to the competitor who refuses to allow variations on its menu. The customer will also tell his/her friends and by word of mouth the shop's popularity might grow.

b. For value to be added, the activity of adding beetroot (including the ordering and delivery of it) to the customer's smoothie should lead to a higher incremental value than the incremental cost of ordering and paying for the beetroot (plus the costs of having it delivered, if any). The smoothie-shop manager can charge a higher price for the smoothie than the menu price, or he can simply ask the menu price if he reasons that the improvement in customer satisfaction or in the customer's perception of quality is worth more that the costs involved.

Note:

- Good relationships are very important within the supply chain. The smoothie-shop manager was on a very good foot with the supermarket manager.
- By fulfilling the customer's special request, the smoothie-making shop could have a competitive advantage over its competitor who is too rigid to allow variations on the standard menu. Flexibility is important.
- Knowledge of the market is important (market or competitive intelligence). It is important for the smoothie-shop manager to have knowledge about the following:
    - How much fruit/vegetables from the supermarket will **cost** so that he/she can make a decision about the price to charge for variations.
    - How **long** it will take the supermarket to deliver the beetroot (in order to manage the customer's expectation).

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4. Outsourcing

In this section, you will learn how businesses can concentrate on what they do best, whilst outsourcing some other functions to subcontractors. Existing and expected future trends related to outsourcing are also discussed, as well as the possible pros and cons of this cost management approach.

Now study the following section in P2 chapter 9B of your bespoke BPP reader and then attempt the activity:

Section	Heading
3	*Outsourcing*

Activity 5.4

Answer the following questions:

a. List three possible benefits of outsourcing.

b. List three possible shortcomings of outsourcing as a cost management approach.

c. Name three labour-related aspects an organisation will have to take into account when it is considering outsourcing to a specific contractor in another country.

d. Which two types of activities should an organisation definitely not outsource?

Solution to activity 5.4

a. i. It can lead to **cost savings** for an organisation.
   ii. It can **make more time available** for the organisation's personnel to focus on the organisation's core activities.
   iii. It can create the opportunity for an organisation to make use of the services of **experts in a certain field**, as well as their specialised equipment, instead of acquiring such equipment themselves for the limited use required.

b. i. The **quality** of the service provided by the contractor may be **inferior** if the organisation does not monitor it properly, as the activity is performed by someone outside the organisation who might have different quality standards than the organisation itself.
   ii. The contractor might not have the same **ethical values** than the outsourcing organisation and could be involved in unethical conduct and practices. This can damage the **reputation** of the organisation that outsourced the activities (because of its relationship with the unethical contractor) or even have negative legal implications for the outsourcing organisation.
   iii. Outsourcing an activity **can potentially cost more** than performing the activity internally.

c. i. whether the contractor's labour force has **experience** in the type of activity to be outsourced
   ii. whether there may be challenges with regard to **language differences** between the organisation and the contractor's staff
   iii. whether there will be **sufficient labour available** to perform the activities to be outsourced

d. i. activities the organisation need to control itself in order to maintain its competitive position
   ii. activities that it can perform at a level comparable to the best organisations in the world

5. Partnering, incentives and gain-sharing arrangements

The section that you are going to study next will explain partnering, incentives and gain-sharing arrangements as possible cost management approaches that an organisation can follow to benefit from cooperation with its customer or its supplier.

Now study the following section in P2 chapter 9B of your bespoke BPP reader and then attempt the activities:

Section	Heading
4	*Partnering, incentives and gain-sharing arrangements*

Activity 5.5

Answer question 9B.3 in P2 chapter 9B.

Solution to activity 5.5

Find the solution to question 9B.3 in P2, at the end of chapter 9B.

6. Summary

Please see the chapter roundup at the end of the chapter referred to (after the text, but before the quick quiz questions) for a brief summary of the concepts discussed in this study unit.

In this study unit, you learnt to

- discuss various approaches that focus on achieving a competitive advantage by explicit involvement of external parties or processes, their benefits and disadvantages and the industries for which they are suitable

SELF-ASSESSMENT THEORY REVIEW QUESTIONS

After working through all the relevant sections in the reader, as well as the guidance and activities provided in this study unit, you should now be able to attempt the following self-assessment theory review question and the self-assessment question below this theory question.

THEORY QUESTION 7

Answer quick quiz questions 1 – 4 at the end of P2 chapter 9B.

SOLUTION TO THEORY QUESTION 7

Find the solutions to quick quiz questions 1 to 4 directly after the quick quiz in P2 Chapter 9B.

SELF-ASSESSMENT QUESTIONS

Now answer the following self-assessment question:

QUESTION 4

Answer question 24 in the exam question bank of P2.

SOLUTION TO QUESTION 4

Find the solution to question 24 in the exam answer bank of P2.

ONLINE ENRICHMENT ACTIVITY

Under the MAC3703 online discussion forum, you will find the forum called "Online Activity: Topic 1". Open this forum and then find and open the topic that starts with "Student discussion of...". Post a comment of no more than 200 words based on either of the following:

- one or more of the options mentioned in the lecturer's first message under the discussion forum topic heading
- a fellow student's comment under the topic heading (Remember to always be polite when you provide feedback on someone else's work.)

TOPIC 2 - TECHNIQUES FOR FORECASTING IN UNCERTAIN CONDITIONS

INTRODUCTION

Budgeting is one of the most important initial processes of managing performance. The budget sets the target or benchmark against which performance will be measured. Forecasting is an important step in the budgeting process. It is not an exact science and therefore requires methods and techniques that will render the forecasting exercise meaningful.

Forecasting uses historical data together with anticipated changes to achieve a justifiable result. Due to uncertain conditions, these results may not be 100% accurate, but they may be close to accurate depending on the techniques used in the forecasting process.

LEARNING OUTCOMES

After studying this topic, you should be able to

- explain the meaning of time series in the context of forecasting
- demonstrate and apply the four components of time series analysis
- distinguish between the additive and multiplicative rules in seasonal variations
- apply these rules in determining a time series
- explain the problems encountered with forecasting
- distinguish between and apply the maximin, maximax and minimax regret rules for decision making

THIS TOPIC CONSISTS OF THE FOLLOWING STUDY UNIT:

Techniques for forecasting in uncertain conditions

Study unit 6: Techniques for forecasting in uncertain conditions

STUDY UNIT 6 TECHNIQUES FOR FORECASTING IN UNCERTAIN CONDITIONS

1. Introduction

In this topic, we will introduce you to more advanced forecasting techniques, especially those used where seasonal fluctuations occur and where uncertainty surrounds the outcome.

This study unit is based on **selected sections** from the following chapters in your bespoke BPP reader:

- chapter 14 of P1
- chapter 19 of P1

2. Forecasting techniques – time series analysis

In order to forecast future outcomes, it is important for you to have knowledge of what transpired in the past, as this will give you an indication of whether or not the past information is relevant to the forecast.

Time series analysis is one technique we can use to prepare the forecasts we will include in our overall budgets.

Now study the following section from P1 chapter 14 of your bespoke BPP reader and attempt the activities:

Section	Heading
6	*The components of time series*

Note:

Take note of the four components of a time series. Make sure you understand the difference between a seasonal and a cyclical variation.

…….

Activity 6.1

Answer question 6 of the quick quiz at the end of P1 chapter 14.

Solution to activity 6.1

Find the solution to quick quiz question 6 directly after the quick quiz in P1 chapter 14.

Activity 6.2

For each case below, indicate whether it is a seasonal or cyclical variation and give a reason for your answer:

a. Sales of sun block are higher in the summer months.

b. During an expansion period in the economy (the previous expansion lasted for three years), sales of reinforced steel soar to support increased construction activity as fixed investment increases.

Solution to activity 6.2

a. This is a short-term seasonal variation. Sales of sun block differ in certain months of the year, as the weather determines the amount of time spent outdoors.

b. This is a cyclical variation. The economy expands and contracts over a number of years. These fluctuations affect a wide range of industries in a similar manner and have a longer-lasting effect on production output and sales.

3. Time series – finding the trend

A trend is simply some form of consistency. This may be an upward movement in sales or a downward movement in costs, or even no movement at all. As mentioned earlier, a past trend may be indicative of a future trend.

In studying this section, please pay attention to the use of moving averages in determining a trend and the use of even and odd numbers of results in your analysis.

Now study the following section in P1 chapter 14 of your bespoke BPP reader and attempt the activity.

Section	Heading
7	*Finding the trend*

Explanatory notes to the example in section 7:

- Note that the number of units sold in each year has no particular trend.
- This may be as a result of a cyclical or seasonal variation.
- We can eliminate this variation by using a moving average.
- Note the upward trend in sales which becomes apparent in part c of the solution.

Activity 6.3

Answer question 14.4 in P1 chapter 14.

Solution to activity 6.3

Find the solution to question 14.4 in P1, at the end of the chapter.

4. Time series – seasonal variations

After we have established a trend, we should also find the seasonal variation in order to complete the forecast.

Please pay attention to the additive and multiplicative rules of determining seasonal variations.

Now study the following section in P1 chapter 14 of your bespoke BPP reader and attempt the activities:

Section	Heading
8	*Finding seasonal variations*

Activity 6.4

Answer quick quiz questions 7 to 12 at the end of P1 chapter 14.

Solution to activity 6.4

Find the solutions to quick quiz questions 7 to 12 directly after the quick quiz in P1 chapter 14.

5. Time series – analysis and forecasting

Now that you have familiarised yourself with the mechanics of trends and seasonal variations, it is time to combine these in the final forecasts that will be used in the budget or other projections.

Now study the following sections in P1 chapter 14 of your bespoke BPP reader and attempt the activities:

Section	Heading
9	*Time series analysis and forecasting*
10	*Using spreadsheet packages to build business models*
11	*Forecasting problems*

Note:

You learnt how to use spreadsheets in AIN2601. We include section 10 here to refresh your knowledge.

……..

Activity 6.5

Answer question 14.5 in P1 chapter 14.

Solution to activity 6.5

Find the solution to question 14.5 in P1, at the end of chapter 14.

Activity 6.6

Answer question 23 in the exam question bank of P1.

Solution to activity 6.6

Find the answer to question 23 in the exam answer bank of P1.

6. The maximin, maximax and minimax regret decision basis

When making decisions, uncertain conditions often make it difficult for us to select the best outcomes. Even when we use probability theory to eliminate some of the uncertainties, we are

still at risk of making the wrong decision. Sometimes there is not enough data available to perform a probability analysis, and management will then have to use other means to accommodate their risk appetite and reach a decision.

In this section, you will learn how to use the above decision criteria to make decisions under conditions of uncertainty. Note the key differences between the methods as well as the objective of each method.

Now study the following sections in P1 chapter 19 of your bespoke BPP reader and attempt the activity that follows:

Section	Heading
1	*Risk and uncertainty in decision making*
4	*Maximin, maximax and minimax regret bases for decision making*

Note:

The content of sections 2, 3 and 5 in your BPP reader was covered in MAC2601 and MAC3701. You may refer to it if you want to refresh your knowledge.

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Comments on the maximin example:

- Firstly note that there are three projects with **three possible outcomes**. Each of these outcomes **has probabilities associated with it**.
- Under normal circumstances, project C would have been selected as it has the highest expected value.
- By selecting project B, we are guaranteed a profit of at least $60 000.

Comments on the minimax regret example:

- Analyse the projects according to the possible outcomes.
- Analyse the maximum regret for each outcome.
- Project A: the maximum regret is 40 (we determine the most we can “lose” if project A is selected).
- Calculate the maximum regret for project B and project C on a similar basis.
- The smallest maximum regret is the 25 of project B. Therefore, we would select project B if we use the minimax regret rule.

Activity 6.7

Answer quick quiz questions 1, 2 and 3 at the end of P1 chapter 19.

Solution to activity 6.7

Find the solutions to quick quiz questions 1, 2 and 3 directly after the quick quiz in P1 chapter 19.

7. Summary

Forecasting and decision making can take various forms depending on the circumstances. It is important for you to understand each decision rule and the mechanics thereof before deciding to use any of them in your forecasts. You will find brief summaries of the key concepts in the chapter roundups for chapters 14 and 19.

In this study unit you learnt to

- explain the meaning of time series in the context of forecasting
- demonstrate and apply the four components of time series analysis
- distinguish between the additive and multiplicative rules for seasonal variations
- apply these rules in determining a time series
- explain the problems encountered with forecasting
- distinguish between and apply the maximin, maximax and minimax regret rules for decision making

SELF-ASSESSMENT THEORY REVIEW QUESTIONS

After working through all the relevant sections in the reader, as well as the guidance and activities provided in this study unit, you should now be able to attempt the following self-assessment theory review question and the self-assessment questions below this theory question.

THEORY QUESTION 8

a. Compare the additive model for determining the time series with the multiplicative or proportional model. (P1 chapter 14, section 6.4 versus section 8.1)

b. Describe the three steps in using time series analysis for forecasting future values. Distinguish between the additive and the multiplicative models. (P1 chapter 14, section 9 – beneath the introduction)

c. Briefly discuss two advantages of time series analysis. (P1 chapter 14, section 9.1)

d. What are the three assumptions and the limitations of time series analysis? (P1 chapter 14, section 9.3)

SELF-ASSESSMENT QUESTIONS

Now answer the following self-assessment questions:

QUESTION 5

Super Spare Parts (Pty) Ltd. estimates its future sales using time-series analysis and has derived the following trend equation from the actual sales data for year 1:

$y = 67\,000 + 600x$

(Where y is the total sales units for the quarter, and
x is the time period [quarter 1 of year 1 is time period 1])

Using the multiplicative model, Super Spare Parts (Pty) Ltd. has derived the following seasonal fluctuation index values (based on year 1 actual sales):

Quarter 1	30
Quarter 2	80
Quarter 3	140
Quarter 4	150

REQUIRED

a. Use the above multiplicative time series model to estimate the sales for year 2, quarter 2.

b. Use an additive time series model to estimate the amount of the seasonal variation for the third quarter.

(Adapted from CIMA, P1, May 2013)

SOLUTION TO QUESTION 5

a. Estimated sales

Year 2, quarter 2 is period 6

Trend in sales = 67 000 + 600 (6)
= 70 600 units

Adjusted for seasonal variations = 70 600 x 0,8① = **56 480 units**

① Quarter 2: Index value / Base value = 80 / 100 = 0,8 (or 80%).

Note:

You will recall that the seasonal variations under the **multiplicative/proportional** model should add up to four. However, if we add up the index values in this question, we get 400. All we need to do now is to rework these values to a proportion of which the one ratio has 4 as the denominator.

This means we will have the following equation for quarter 1 (where a represents the reworked index value):

$\frac{30}{400} = \frac{a}{4}$

$400a = 120$

$a = 120/400$

$a = 0,3$

On a similar basis, we can calculate the reworked index values for quarters 2, 3 and 4 as 0,8; 1,4 and 1,5 respectively.

Another and possibly more simple way of looking at this: if the index values add up to 400 instead of only 4, the **base value** has to be 400/4 = **100**, which means we can simply divide each index value by 100 to arrive at reworked index values.

So, for example, for quarter 2 we will have 80/100 = 0,8 and for quarter 3 we will have 140/100 = 1,4.

This renders the same result as adding up the numbers (30 + 80 + 140 + 150 = 400) and then dividing each number by the total before multiplying by four (quarter 1: 30/400 x 4 = 0,3; quarter 4: 150 / 400 x 4 = 1,5; etc.).

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b. Seasonal variation

Trend in sales for quarter 3, year 1	= 67 000 x 600(3) = 68 600 units
Actual sales for quarter 3, year 1	= 68 600 x 1,4② = 96 040 units
Seasonal variation using additive model	= 96 040 – 68 600 = **27 440**

② Quarter 3: Index value / Base value = 140 / 100 = 1,4 (or 140%).

QUESTION 6

Answer question 22 in the exam question bank of P1.

SOLUTION TO QUESTION 6

Find the solution to question 22 in the exam answer bank of P1.

QUESTION 7

Mealtitude, a dinner "club", is deciding on its monthly membership fees. The number of members will be determined by a set of conditions. The forecast monthly cash inflows from membership fees are as follows:

Membership fee	**Membership income**		
	Scenario 1	**Scenario 2**	**Scenario 3**
	R'000	**R'000**	**R'000**
Level A	100	120	40
Level B	90	30	100
Level C	60	50	70
Level D	50	90	60

REQUIRED

What fee level would be set if Mealtitude used

a. the maximax criterion

b. the minimax regret criterion

(Adapted from CIMA P1, March 2013)

SOLUTION TO QUESTION 7

a. The maximum income for fee Level A is R120 000.

The maximum outcome for fee Level B is R100 000.

The maximum outcome for fee Level C is R70 000.

The maximum outcome for fee Level D is R90 000.

Therefore, if Mealtitude wants to maximise the maximum income, it will set the membership fee at Level A, as the highest maximum income (R120 000) is associated with this fee level.

b. A regret matrix is shown below:

Membership fee	**Membership income**			**Maximum regret**
	Scenario 1	**Scenario 2**	**Scenario 3**	
	R'000	**R'000**	**R'000**	**R'000**
Level A	0	0	60	60
Level B	10	90	0	90
Level C	40	70	30	70
Level D	50	30	40	50

To minimise the maximum regret, the membership fee should be set at Level D. (Level D is associated with the lowest maximum regret (R50 000)).

TOPIC 3 – PRICING DECISIONS AND PRICING STRATEGIES

INTRODUCTION

Profit is not merely a function of cost control and management, but also of optimal pricing. Pricing strategies require an understanding of cost allocations, products and the markets in which one operates. Organisations also need to consider their position in the market and how they differentiate themselves from their competitors and their products from other products in the market.

Apart from considering the so-called cost-based structures of determining selling prices, organisations also need to consider a number of qualitative factors as well as marketing strategies. Some organisations may also consider economic theory when setting their prices, but usually to a lesser extent.

LEARNING OUTCOMES

After studying this topic, you should be able to

- identify and discuss non-pricing factors that affect the demand (elasticity) for the product or service
- explain the qualitative issues surrounding price setting
- discuss and calculate optimal selling prices applying economic theory
- distinguish between different cost-based pricing techniques
- discuss the conflict between marginal cost pricing and the need for the full recovery of all costs incurred
- discuss pricing strategies when launching new products
- discuss alternative methods of price setting
- explain marketing strategies for products during the different stages of their life cycles

Note:

The following learning outcomes regarding the application of pricing techniques are covered in more depth in other MAC modules, but we include them here to present a complete picture of pricing decisions:

- use the tabulation approach to find the optimal selling price (MAC3701)
- calculate selling prices using full cost-based pricing and marginal costing (MAC3701)
- calculate special prices using marginal costing (MAC2601)

THIS TOPIC CONSISTS OF THE FOLLOWING STUDY UNIT:

Pricing decisions and pricing strategies

Study unit 7: Pricing decisions and pricing strategies

STUDY UNIT 7 PRICING DECISIONS AND PRICING STRATEGIES

1. Introduction

In this study unit, we will focus on the techniques and strategies that price-setting organisations (price-setters) employ when setting their selling prices. Price-setting organisations are usually large organisations that are market leaders or that are selling custom-made products or services. In contrast, price-taking organisations do not set prices, but charge prices set by the market. Price-takers are usually smaller organisations selling standardised products and services.

We will also focus on price-setting in imperfect markets, which are markets where the demand is affected by the price that is charged. The focus will mostly be on the qualitative and marketing strategies that affect pricing.

This study unit is based on **selected sections** from the following chapters in your bespoke BPP reader:

- chapter 6 of P2
- chapter 7 of P2

2. Issues affecting demand and the price-setting decision

Setting prices can be tricky. It does not simply entail adding a standard markup to the costs incurred. An organisation needs to consider many other aspects of the macro-economic environment before setting a price that will optimise profits. These considerations include competitor pricing, the prices of substitute products and the stage of the product in its life cycle, as well as current economic conditions.

Now study the following theoretical sections in P2 chapter 6 of our bespoke BPP reader and attempt the activity:

Section	Heading
1	*Demand*
2	*Other issues that influence pricing decisions*

Note:

You also covered some of the sections above in your economics module(s). We include it here to refresh your knowledge and to show the link between some of the different aspects of determining a price.

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Activity 7.1

Answer question 6.1 in P2 chapter 6.

Solution to activity 7.1

Find the solution to question 6.1 in P2, at the end of chapter 6.

3. Economic theory and price setting

In your economics modules, you would have learnt that the profits of an organisation are maximised where marginal revenue equals marginal cost. The term "marginal" means the change in total costs or total revenues that results from manufacturing or selling **one more unit**. For example, marginal revenue = the total revenue from selling 20 001 units less the total revenue from selling 20 000 units.

In theory, an organisation can use regression techniques to determine the optimal price of a product. MR = MC is used to arrive at the output level for profit maximisation (substitute the MR and MC with the relevant information provided and solve for *x*, the ouput level or quantity). The optimal price is then determined by substituting this output level into the demand equation, or reading the price at this output level off the graph (using the demand curve).

Now study the following sections in P2 chapter 6 of your bespoke BPP reader and attempt the activities:

Section	Heading
3	*Deriving the demand curve*
4	*The profit-maximising price/output level*

Note:

Section 4.3 (using tabulation to determine the optimum price) is also covered in MAC3701. We include it again for the sake of completeness.

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Explanatory notes to the example in section 4.2:

- The marginal cost of producing one unit is R40.
- X_1 and X_2 represent sales of the same product in units, but in different markets.
- Note that there are two sets of equations, namely, one for the price at a specific level of demand (the *demand curve, demand function* or *demand equation*) and the other for the marginal revenue.
- Remember that marginal revenue must equal marginal cost at the optimal price point.
- Use the MR equation for market 1 to solve for X_1, applying the principle **MR = MC at the point of profit maximisation**.
- Substitute the value of X_1 into the demand equation for market 1.
- Repeat for market 2.

Activity 7.2

Answer questions 6.2, 6.3 and 6.4 in P2 chapter 6.

Solution to activity 7.2

Find the solutions to questions 6.2, 6.3 and 6.4 in P2, at the end of chapter 6.

Activity 7.3

Answer question 15 in the exam question bank of P2.

Solution to activity 7.3

Find the solution to question 15 in the exam answer bank of P2.

4. Cost-based pricing techniques

When we keep the profit motive in mind, prices must generally cover all costs incurred. It is not sufficient to set prices without understanding cost structures and allocations, as this may result in a product being under cost and overpriced, or vice versa, possibly with disastrous financial consequences.

In terms of IAS 2 (the accounting standard on inventory), all costs incurred to bring inventory to a saleable point must be included in the cost of inventory. These costs include fixed as well as variable production costs. This refers to absorption costing, which is also called full costing. The exclusion of fixed costs from the pricing policy is referred to as marginal costing.

Full-cost pricing is used for **long-term** pricing as all costs must be recovered to ensure profitability, while **marginal-cost pricing** is mainly used in the **short term**, for example when pricing a special order.

Now study the following sections in P2 chapter 6 of your bespoke BPP reader and attempt the activities:

Section	Heading
5	*Full cost-plus pricing*
6	*Marginal cost-plus (mark-up) pricing*
7	*Pricing based on mark-up per unit of limiting factor*

Note:

When answering questions, please pay special attention to which costs should be included before you apply a standard markup to determine the selling price.

……

Further guidance to the example of full cost-plus pricing in 5.2:

- Part a of the example simply requires a price based on full cost plus a markup of 20%.
- This price consists of the variable cost per unit, plus the fixed cost per unit, plus the markup.
- Note that assumptions a - d result in different selling prices, based on the inclusion or exclusion of each of the following in or from 'full cost':
    - opportunity costs

- a possible error that may have been made in the initial estimation of costs.

Further guidance to the example of full cost-plus pricing in an imperfect market in 5.3:

- An imperfect market is a market where demand is sensitive to price changes.
- Note how the demand for the product changes with a change in the selling price.
- A 25% markup on full cost may not be the price that will maximise profits.
- Maximising the contribution will lead to maximised profits where fixed costs represent maximum capacity or, in other words, where no additional fixed costs are incurred.
- Please take note of the difference in profits achieved when absorption costing is used in contrast to marginal costing. The difference results from the fact that the two methods treat fixed production costs differently.
- Total profit is maximised at R12 per unit and sales of 32 000 units.

Note:

Cost-based pricing is dealt with in more detail in MAC2601 (short-term pricing) and MAC3701 (long and short-term pricing).

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Activity 7.4

Answer question 6.5 in P2 chapter 6.

Solution to activity 7.4

Find the solution to question 6.5 in P2, at the end of chapter 6.

Note:

If you use a markup of 70%, you will arrive at a selling price of R8,08. This exceeds a competitor's price of R7,99. It would therefore **not** make sense to exceed the current market price.

……

Activity 7.5

Answer question 6.6 in P2 chapter 6.

Solution to activity 7.5

Find the solution to question 6.6 in P2, at the end of chapter 6.

Activity 7.6

Answer quick quiz questions 7 and 9 at the end of P2 chapter 6.

Solution to activity 7.6

Find the solutions to quick quiz questions 7 and 9 directly after the quick quiz in P2 chapter 6.

5. Pricing strategies for new products

When a new product is introduced in the market, there is usually uncertainty as to how the customers or clients will respond. Common strategies in this regard are market penetration and market skimming. Remember that most markets are imperfect and that the strategies you follow need to take this into consideration.

Now study the following section in P2 chapter 6 of your bespoke BPP reader and attempt the activities:

Section	Heading
8	*Pricing strategies for new products*

Activity 7.7

Answer question 6.7 in P2 chapter 6.

Solution to activity 7.7

Find the solution to question 6.7 in P2, at the end of chapter 6.

Activity 7.8

Answer quick quiz question 11 at the end of P2 chapter 6.

Solution to activity 7.8

Find the solution to quick quiz question 11 directly after the quick quiz in P2 chapter 6.

6. Alternative pricing strategies

It is vital for organisations to **gain and maintain** market share through their pricing policies. Often businesses need to differentiate themselves from their competitors in order to stand out from the crowd and be recognised. They have to convince the market that they offer the best quality, price and service or some combination of these.

Now study the following theoretical section in P2 chapter 6 of your bespoke BPP reader and attempt the activity:

Section	Heading
9	*Other pricing strategies*

Activity 7.9

Answer question 6.8 in P2 chapter 6.

Solution to activity 7.9

Find the solution to question 6.8 in P2, at the end of chapter 6.

7. Marketing strategies during the life cycle of a product

Marketing strategies will differ from product to product and organisation to organisation. Again, remember that an organisation needs to draw customers towards its product and then face the challenge of holding on to this market share.

A new product on the market may be regarded with scepticism until it has been tried and tested, while a product that is mature and known in the market may already have a loyal customer base. As a result, marketing strategies for new products versus established products will need to differ. In this section, we will look at the different marketing strategies for different products during the different stages of their life cycles.

In topic 1, we introduced you to the concept of accounting for all costs over the life cycle of the product. We will now focus on how to tailor marketing strategies to the product's stage in the life cycle.

Now study the following theoretical sections in P2 chapters 6 and 7 of your BPP reader and then do the activity:

Chapter	Section	Heading
6	1.3.1	*Product life cycle* (please study again)
7	2.7	*Life cycle costs and marketing strategies*

Activity 7.10

List the four main components of a marketing mix or program, which should be catered for differently during each stage of a product's life cycle.

Solution to activity 7.10

Product, price, distribution and promotion

8. Summary

Please see the chapter roundup at the end of every chapter referred to (after the text, but before the quick quiz questions) for a brief summary of the concepts discussed in this study unit.

In this study unit, you learnt to

- identify and discuss non-pricing factors that affect the demand (elasticity) for the product or service
- explain the qualitative issues surrounding price setting
- discuss and calculate optimal selling prices applying economic theory
- distinguish between different cost-based pricing techniques
- discuss the conflict between marginal cost pricing and the need for the full recovery of all costs incurred
- discuss pricing strategies when launching new products
- discuss alternative methods of price setting
- explain marketing strategies for products during the different stages of their life cycles

SELF-ASSESSMENT THEORY REVIEW QUESTIONS

After working through all the relevant sections in the reader, as well as the guidance and activities provided in this study unit, you should now be able to attempt the following self-assessment theory review question and the self-assessment questions below this theory question.

THEORY QUESTION 9

a. Briefly discuss any five factors (excluding price) that determine the degree of demand elasticity. (P2 chapter 6, section 1.1.6)
b. What are the four stages in a product's life cycle? (P2 chapter 6, section 1.3.1)
c. Describe the "four Ps" of the marketing mix. (P2 chapter 6, section 1.3.3)
d. Explain the four common types of markets. (P2 chapter 6, section 2.1)
e. Discuss four possible tactics to fight a price war. (P2 chapter 6, section 2.2.1)
f. Provide five criticisms of the concept of a "profit-maximising price/output level". (P2 chapter 6, section 4.6)
g. Discuss the drawbacks of marginal cost-plus pricing. (P2 chapter 6, section 6.1)
h. Describe four circumstances in which a penetration pricing policy may be appropriate. (P2 chapter 6, section 8.2.1)
i. Describe five circumstances in which a market skimming pricing policy may be appropriate. (P2 chapter 6, section 8.2.2)
j. Briefly discuss four bases for product differentiation. (P2 chapter 6, section 9.1 box)
k. Which four conditions should be present for price discrimination to be effective? (P2 chapter 6, section 9.1)
l. Briefly discuss three alternative forms of pricing. (P2 chapter 6, sections 9.1.1 to 9.5)
m. List three reasons for using discounts to adjust prices. (P2 chapter 6, section 9.6)

SELF-ASSESSMENT QUESTIONS

Now answer the following self-assessment questions:

QUESTION 8

Answer question 12 in the exam question bank of P2.

SOLUTION TO QUESTION 8

Find the solution to question 12 in the exam answer bank of P2.

QUESTION 9

Answer questions 13 and 14 in the exam question bank of P2.

SOLUTION TO QUESTION 9

Find the solutions to questions 13 and 14 in the exam answer bank of P2.

TOPIC 4 – IAS 11 CONSTRUCTION CONTRACTS

INTRODUCTION

In this topic, we will be looking at International Accounting Standard (IAS) 11 on construction contracts.

The construction industry is one of the major industries in any economy. Large projects, such as construction of the Gautrain and the soccer stadiums for the 2010 Soccer World Cup run over periods of longer than one year. Construction companies (and subcontractors) would like to report provisional profits as the project progresses. IAS 11 prescribes how we should account for costs and revenues over successive reporting periods.

LEARNING OUTCOMES

After studying this topic, you should be able to

- identify the different types of construction contracts
- state the criteria for combining contracts
- measure the project's revenues and costs
- calculate estimated profits using the prescribed methods
- present and disclose relevant information

Note:

You may have learnt about the Conceptual Framework for Financial Reporting and IAS 8 *Accounting Policies, Changes in Accounting Estimates and Errors* in your financial accounting studies (FAC 3701). Knowing the concepts and principles discussed in the Framework and in IAS 8 may prove to be useful for your studies of contract costing.

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THIS TOPIC CONSISTS OF THE FOLLOWING STUDY UNIT:

IAS 11 Construction contracts

Study unit 8: Construction contracts (IAS 11)

STUDY UNIT 8 CONSTRUCTION CONTRACTS (IAS 11)

1. Introduction

Large contracts, such as the construction of bridges, commercial buildings, ships etc take a considerable amount of time to complete, often spanning over more than one year. This means that construction companies may not earn revenues and incur costs proportionately over the period of the contract. They may incur costs on an ongoing basis, while revenues may be earned depending on the stage of completion. Consequently, the question arises as to which part of the revenues and costs they should account for in each of the years of the contract term. The key objective of IAS 11 is to provide guidance for the treatment of revenues and costs associated with construction contracts.

This study unit is based on **section 2** of the following chapter in your bespoke BPP reader:

- chapter 11 of F1

which you should read in conjunction with IAS 11 *Construction contracts*.

You can find IAS 11 in the IFRS handbook that you will possibly use or have used in financial accounting. You can also find IAS 11, excluding the implementation guidance (IG) and the basis for conclusions (BC), on the website of the IFRS Foundation and the International Accounting Standards Board (IASB) at www.ifrs.org (accessed on 3 September 2013). Look under *Standard and interpretations (IFRSs and IFRICs)*. You may be requested to first register as a user of the website.

In the first few sections, we will investigate the theory and background to IAS 11. Thereafter we will apply the principles in comprehensive activities.

2. When to recognise profits

We will start the discussion by investigating how the profitability of the organisation will differ in each reporting period depending on when the profit on the contract is recognised.

Now study the following section in F1 chapter 11 of your bespoke BPP reader:

Section	Heading
2.1	*The need for IAS 11*

Notes to the example in section 2.1:

Should we defer profit until the end of the contract and only recognise the full profit in the year of completion? Let's analyse some of the key numbers:

Total contract price	(750 000 x 2)	1 500 000
Total estimated costs	(600 000 x 2)	1 200 000
Total estimated profits		300 000

In terms of part (a) of the example, no profit will be shown in the year 20X5, while the full profits will be recognised in the year of completion, namely 20X6. What about the costs that have been incurred thus far? We would need to recognise these costs as work in progress in 20X5. This does not make accounting sense.

Should we recognise an appropriate portion of the profits in each of the years of the contract period? The example states that half of the contract is complete at the end of 20X5. It would make sense then to recognise 50% of the total estimated profit in this year, and to recognise the other 50% in the following year. This makes more accounting sense in terms of the accrual concept.

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3. Construction contracts: concepts and terms

Now that you understand why an organisation would want to recognise profits in different accounting periods, let's inspect the different concepts or terms that are used in the accounting for construction contracts.

Now study the following theoretical sections in F1 chapter 11 of your bespoke BPP reader in conjunction with the relevant paragraphs of IAS 11:

Section	Heading	IAS 11
2.2	*What is a construction contract?*	11.3 – 11.6
2.3	*Combining and segmenting construction contracts*	11.7 – 11.10
2.4	*Contract revenue*	11.11 – 11.15
2.5	*Contract costs*	11.16 – 11.21

Notes:

① The risk with cost-plus contracts lies in the description and nature of expenses and which items will have to be reimbursed. Contracts of this nature must be worded carefully.

② You should have a clear understanding of the different types of contracts as well as those factors that would permit the combining and segmenting of contracts.

③ Read the questions carefully to establish which costs are recoverable in (charged to) the contract. If the question does not mention anything in this regard, the organisation would be unable to recover those costs incurred for the benefit of the organisation as a whole, such as costs relating to general admin, research and development. The principles here are the same as for inventory valuation (IAS 2).

……..

4. Recognition of revenue and expenses

In this section, we will discover the principles for recognition of individual items of revenue and expenses relating to the contract.

Now study the following theoretical sections in F1 chapter 11 of your bespoke BPP reader in conjunction with the relevant paragraphs of IAS 11:

Section	Heading	IAS 11
2.6	*Recognition of contract revenue and expenses*	11.22; 11.25 – 11.27; 11.30 – 11.31
2.7	*When can reliable estimates be made?*	11.23 – 11.24; 11.28 – 11.29
2.9	*Outcome of the contract cannot be predicted reliably*	11.32 – 11.35
2.10	*Recognition of expected losses*	11.36 – 11.37

Notes:

① The principles of recognition are very similar to those that generally apply for the preparation of financial statements. You learnt about the general principles in financial accounting and they are therefore part of your deemed knowledge and will not be revised here.

② You should read the questions carefully and look for words that would indicate that the organisation could recognise amounts of revenue and costs and can in fact charge these to the contract.

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5. Stage of completion and presentation

When determining the amount of profit that an organisation can recognise, it is important to determine the stage of completion. There are various methods for doing that. The stage of completion also affects the disclosure of various items in the financial statements.

Now study the following sections in F1 chapter 11 of your bespoke BPP reader in conjunction with the relevant paragraphs of IAS 11 and attempt the activities:

Section	Heading	IAS 11
2.8	*Determining the stage of completion*	11.25 – 11.26
2.11	*Summary of accounting treatment*	11.38 – 11.46 (in addition to recognition of contract revenue, expenses and expected losses already included under other headings)

Notes to example in section 2.8:

- It always makes sense to **start** by calculating the **estimated profit or loss** over the full period of the contract.

- Take note that a **variation** occurred in the second year, which is added to the original contract price.
- Total estimated costs are the sum of the costs incurred to date and the estimated future costs to complete the contract.
- Raw materials held in inventory for the next period are excluded from cost incurred to date.
- The stage of completion is calculated **cumulatively.** For example, in 20X6, 26% of the total work was completed, and **as at the end of 20X7**, 74% was completed. This means that it was deemed that **48%** (74% – 26%) of the **work** was carried out **in 20X7** (if cost was used as a basis).
- Therefore, the profit recognised in 20X7 will be 74% of the total estimated profit as calculated at the end of 20X7, less the profit or loss in monetary value already recognised in 20X6.
- **DO NOT** calculate the amount of profit to be recognised in 20X7 as 48% of the current estimated profit on the whole project. If estimates change in the current period, this might lead you to make an error. Follow the instructions above (cumulative profit that an organisation can recognise based on current stage of completion, less all profits previously recognised). You will learn more about changes in estimates later in this study unit.

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Note to section 2.11.2:

There is a difference between the gross amount due from customers and trade receivables. The first item reflects the value of work (in sales terms) recognised according to the cumulative percentage of completion, but not invoiced yet, whilst the second item reflects work already invoiced, but still unpaid. It is important that you classify these due amounts correctly.

……..

Activity 8.1

Mbabazane (Pty) Ltd. started contract Railway in 20X6 and continued with its contract Harbour during the same financial year. The following information is available regarding these two contracts:

	Railway	Harbour
	R	R
Cost to date	1 200 000	13 950 000
Estimated total costs	12 000 000	?
Contract price	16 000 000	18 000 000
Estimated additional costs to complete the contract	?	1 050 000
Value of work certified – 20X6	2 000 000	14 400 000
Value of work certified – 20X5	-	6 000 000

Mbabazane uses the percentage of completion method for recognising profit on its contracts. Both contracts meet all the conditions for use of this method. They consistently apply the following methods to determine the stage of completion:

- Contract Railway: the proportion of **cost incurred to date** to the **total contract cost**
- Contract Harbour: **work certified** in proportion to the **total contract price**

REQUIRED

a. Calculate the cumulative profit or loss on Contract Railway that the company should have recognised up to date (the end of 20X6).

b. Calculate the cumulative profit or loss on Contract Harbour that the company should have recognised up to date (the end of 20X6).

c. Now, assume a contract price of R14 000 000 for Contract Harbour. There have been no changes in estimates of the contract price or total contract costs since the start of the contract. Calculate the profit/loss that Mbabazane would recognise in its statement of profit or loss and other comprehensive income for the 20X6 financial year.

Solution to activity 8.1

a. Cumulative profit/loss = $\frac{\text{cost to date}}{\text{estimated total costs}} \times \frac{\text{estimated total profit}}{1}$

= $\frac{1\ 200\ 000}{12\ 000\ 000} \times \frac{16\ 000\ 000 - 12\ 000\ 000}{1}$

= 10% x 4 000 000

= R400 000

b. Cumulative profit/loss = $\frac{\text{value of work certified}}{\text{contract price}} \times \frac{\text{estimated total profit}}{1}$

= $\frac{14\ 400\ 000}{18\ 000\ 000} \times \frac{18\ 000\ 000 - (13\ 950\ 000 + 1\ 050\ 000)}{1}$

= 80% x 3 000 000

= R2 400 000 cumulative **up to 20X6**

Cumulative profit/loss = $\frac{6\ 000\ 000}{18\ 000\ 000} \times \frac{18\ 000\ 000 - (13\ 950\ 000 + 1\ 050\ 000)}{1}$

= 33,33% x 3 000 000

= R1 000 000 cumulative **up to 20X5**

Amount of profit to recognize in 20X6 = R2 400 000 – R1 000 000

= R1 400 000

c. Total estimated loss = 13 950 000 + 1 050 000 – 14 000 000

= (R1 000 000)

An organisation must recognise an estimated loss that is probable immediately when it becomes probable that the loss will be incurred. This means that the total loss of R1 000 000 would already have been recognised in the statement of profit or loss and other comprehensive income at the start of the contract. As there have been no changes in estimates regarding the total contract price or the total contract costs since the start of the contract, no profit or loss amount will be recognised in the statement of profit or loss and other comprehensive income in the 20X6 financial year.

Reflection and online activity

Why do you think they would have accepted a loss-making contract? Please discuss this on myUnisa under the discussion forum topic with the heading "Loss-making contracts".

Possible reasons could include the following:

1. Cost escalations that occurred between the time that the company submitted the tender and the time that the contract was awarded to them, which were not built into the contract. The company cannot recover these escalations from the client.
2. Errors made during the cost estimation for the tender amount.
3. Due to a strategic business decision - this contract might be one of many for an important client and it might be important to retain the business of this client.

Activity 8.2

Answer question 11.2 in F1 chapter 11.

Solution to activity 8.2

Find the solution to question 11.2 in F1, at the end of chapter 11.

6. Changes in estimates and disclosures

Estimated contract revenues and costs may change over the period of the contract due to variations and escalations. Organisations must account for this as a change in estimate in terms of IAS 8 - *Accounting policies, changes in accounting estimates and errors.* In MAC3703, we will focus on the effect that the change in estimate has on the amount of profit or loss recognised.

Now study the following sections in F1 chapter 11 of your bespoke BPP reader in conjunction with the relevant paragraphs of IAS 11:

Section	Heading	IAS 11
2.12	*Changes in estimates*	11.38
2.13	*Disclosures*	11.39 - 45
2.14	*IAS 11 example (both examples)*	Appendix

Note to example in section 2.12:

The process of accounting for profits or losses remains the same. Only the estimates have changed.

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7. Summary

Please see the final 'tick mark bullet' in the chapter roundup at the end of the chapter referred to (after the text, but before the quick quiz questions) for a brief summary of calculation rules for contract costing.

You should now be able to

- identify the different types of construction contracts
- state the criteria for combining contracts
- measure the project's revenues and costs
- calculate estimated profits using the prescribed methods
- present and disclose relevant information

SELF-ASSESSMENT THEORY REVIEW QUESTIONS

After working through all the relevant sections in the reader, as well as the guidance and activities provided in this study unit, you should now be able to attempt the following self-assessment theory review question and the self-assessment questions below this theory question.

THEORY QUESTION 10

a. Distinguish between a fixed-price contract and a cost-plus contract (see F1 chapter 11, section 2.2).

b. Clearly list the criteria required before one would be able to combine contracts as a single construction contract (see F1 chapter 11, section 2.3).

c. Answer quick quiz questions 3, 4 and 5 at the end of F1 chapter 11. (Find the solutions directly after the quick quiz.)

SELF-ASSESSMENT QUESTIONS

Now answer the following self-assessment questions:

QUESTION 10

Answer question 12 in the exam question bank of F1.

SOLUTION TO QUESTION 10

Find the solution to question 12 in the exam answer bank of F1.

QUESTION 11

Indaka (Pty) Ltd. is a South African construction company that is constructing a new shopping centre in Pietermaritzburg. Indaka has estimated the cost of the project at R20 000 000 and has negotiated a contract fee of R24 000 000. The contract is expected to last four years, and Indaka will receive equal stage payments at the end of each year. Eight percent of these payments is held back as retention money.

The following information was available at the end of each respective financial year:

	20X3	**20X4**	**20X5**	**20X6**
	R	**R**	**R**	**R**
Cost to date	5 000 000	9 000 000	15 500 000	21 000 000
Estimated further costs to complete the contract	15 200 000	11 300 000	5 200 000	0
Value of work certified (at year-end)	6 480 000	12 240 000	16 800 000	24 000 000

REQUIRED

a. Calculate the profit/loss that the company should recognise in the statement of profit or loss and other comprehensive income for each of the four financial years. The percentage of completion method is used, using the proportion of work certified to the total contract price as the basis for calculating the percentage of completion.

b. Calculate the amount due to/from the customer at the end of 20X4. Ignore the retention money for this part of the question.

c. Calculate the payment that Indaka can expect to receive from its customer at the end of 20X5.

(Adapted from www.cimaglobal.com. Accessed on 4 September 2013.)

SOLUTION TO QUESTION 11

a. Profit or loss to be recognised

	20X3	20X4	20X5	20X6
Estimated total profit/(loss) ①	R3 800 000	R3 700 000	R3 300 000	R3 000 000
Percentage of completion ②	27%	51%	70%	100%
Cumulative profit/(loss)	1 026 000	1 887 000	2 310 000	3 000 000
(Profit)/loss recognised up to end of previous financial year	(0)	(1 026 000)	(1 887 000)	(2 310 000)
Profit/(loss) for the year (recognised in the statement of profit or loss and other comprehensive income)	1 026 000	861 000	423 000	690 000
Cost of sales % on total contract ③ ④	84,167%	84,583%	86,25%	87,5%

Calculations:

① 24 000 000 – (15 200 000 + 5 000 000);
24 000 000 – (11 300 000 + 9 000 000);
24 000 000 – (5 200 000 + 15 500 000);
24 000 000 – (0 + 21 000 000)

② 6 480 000 / 24 000 000;
12 240 000 / 24 000 000;
16 800 000 / 24 000 000;
24 000 000 / 24 000 000

③ (15 200 000 + 5 000 000) / 24 000 000;
(11 300 000 + 9 000 000) / 24 000 000;
(5 200 000 + 15 500 000) / 24 000 000;
(0 + 21 000 000) / 24 000 000

④ Latest projection of total cost/total revenue at the end of each year for the **total** contract.

Notes:

- The revenue (sales) for each year is equal to the increase in the value of work certified from the previous year-end. For example, for 20X5 it is (70% – 51%) x R24 million = R4, 56 million.

- If required to disclose the amount for **cost of sales in a year**, we recommend that you first calculate the movement in profit or loss for the year (amount to be recognised as profit or loss). Then calculate cost of sales as the difference (balancing figure) between the revenue (sales) amount for the year and the profit or loss movement for the year (revenue – profit = cost of sales). For example, for 20X5:

	R
Revenue	4 560 000
Cost of sales (balancing figure)	4 137 000
Profit	423 000

Proof of cost of sales amount:

Cost of sales % x revenue for 20X5 (86,25% x R4,56 million)	3 933 000
Change in cost of sales % estimate, applied to cumulative revenue up to 20X4 [(86,25% – 84,583%) x (51% x R24 million)]	204 041
	# 4 137 041

Small rounding difference.

……..

b.

Amounts due to/from customer

Revenue	12 240 000	Debtors (invoiced)	12 000 000
Costs to date	9 000 000	Cost of sales (84,583% x R12,24 million)	10 353 000
Balance (c/fwd)	1 113 000		
	22 353 000		22 353 000
		Balance (b/fwd)	1 113 000

c. Cash to be received = 24 000 000 / 4 x 92%

= 6 000 000 x 92%

= R5 520 000

Note:

Indaka will only receive the 8% retention money at/after the expiry of the specified retention period and net of any claims that have been made against it.

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E-LEARNING ACTIVITIES

You can register on the Deloitte website at:
http://www.deloitteifrslearning.com/description.asp?id=ias11_v10&mod=ias to access online learning materials for IAS 11 (accessed on 2 September 2013).

Go to the ACCA website for further examples by typing the following URL into your browser and pressing enter:
http://www.accaglobal.com/content/dam/acca/global/PDF-students/2012/sa_novdec08_retallack.pdf (accessed on 2 September 2013).

TOPIC 5 – DEVELOPMENTS IN REPORTING

INTRODUCTION

In this topic, you will be faced with recent reporting developments in communicating with shareholders and other stakeholders of the organisation (other developments than those included in your FAC syllabus).

Financial and non-financial reporting requirements change continually as shareholders (owners) and other stakeholders demand information that is more useful for decision-making purposes. In addition to that, reporting requirements differ based on the jurisdiction (country) in which the business operates. Over the past few years, there has been a drive for convergence of reporting requirements to aid users in their understanding of the information contained in reports.

LEARNING OUTCOMES

After studying this topic, you should be able to

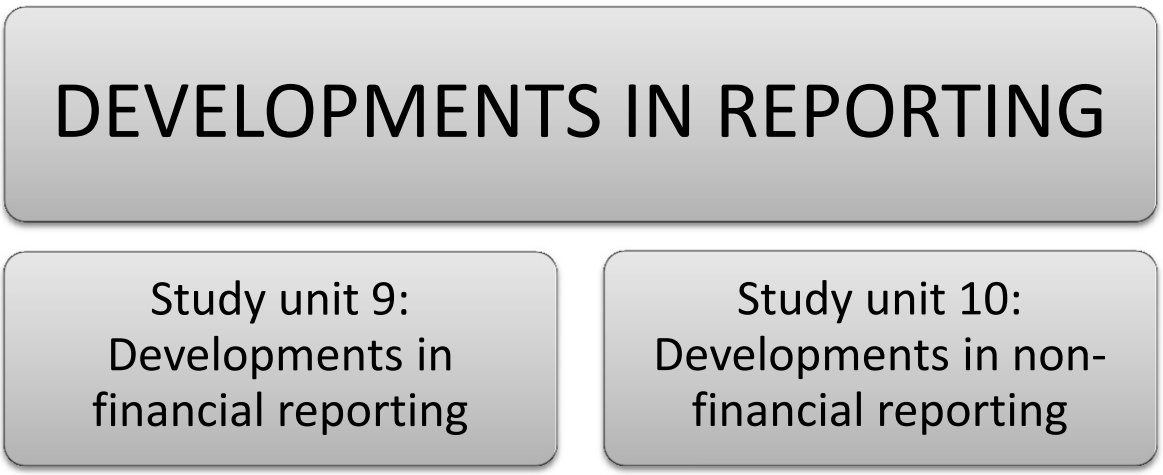
- identify barriers to the convergence of International Financial Reporting Standards (IFRSs) and generally accepted accounting principles in the United States (US GAAP) as well as the benefits of the convergence
- discuss the major differences between IFRS and US GAAP as well as the measures designed to contribute towards their convergence
- discuss narrative reporting in general as well as pressures for extending the scope and quality of external reports to include prospective and non-financial matters
- explain how information concerning the interaction of a business with society and the natural environment can be communicated in the published accounts
- discuss social and environmental issues that are likely to be most important to the stakeholders in an organisation
- explain the process of measuring, recording and disclosing the effect of exchanges between a business and society (human resource accounting)

ASSUMED PRIOR KNOWLEDGE

Your MAC2602 module already provided you with some background to the impact the organisation has on society and the natural environment as well as the pressure for reporting on

these matters to a wider stakeholder group than merely the shareholders in or owners of the business.

THIS TOPIC CONSISTS OF THE FOLLOWING STUDY UNITS:



STUDY UNIT 9 DEVELOPMENTS IN FINANCIAL REPORTING

1. Introduction

The International Accounting Standards Board (IASB) created the International Accounting Standards (IASs) and International Financial Reporting Standards (IFRSs) to harmonise accounting throughout all countries across the globe. The objective of the harmonisation is to ensure that financial reporting around the globe is prepared using the same accounting standards or rules.

Preparing accounts using the same accounting standards ensures that we can compare accounts prepared in different countries. Common accounting standards eliminate the different interpretations caused by disparities between accounting standards in different jurisdictions.

We base this study unit on F2 chapter 17 of your bespoke BPP reader. You will notice from the learning outcomes that there are no calculations or application involved. You should understand and be able to discuss the issues covered in the reader, as set out in the learning outcomes.

2. International harmonisation – barriers, drivers and role players

The project of harmonising accounting standards faces barriers like the following:

- international issues (independence, purpose of reporting)
- different tax and legal systems
- stage of development of accounting profession (sophistication and legal backing) and economic development

Now study the following theoretical section in F2 chapter 17 of your bespoke BPP reader:

Section	Heading
1	*International harmonisation*

Reflective activity

Suppose you were an international investor with investments in the following: Facebook Inc in the USA, Barclays PLC in the UK, Siemens AG in Germany and Sasol Ltd in South Africa. How would you compare the turnover reported by each of these organisations?

3. Accounting developments around the world

Most first world countries have developed financial reporting systems conducive to their business climate and the needs of their investors and users over many years. You would expect all countries within the European Union to have similar reporting systems and accounting requirements. Different legal systems and tax laws usually add to the differences between countries in respect of disclosure and presentation of financial information.

South Africa has always been on the forefront of change in respect of the accounting profession. It was one of the first countries to start adopting IFRSs.

Now study the following theoretical section in F2 chapter 17 of your bespoke BPP reader:

Section	Heading
2	*Accounting overseas*

Activity 9.1

Answer question 17.1 in F2 chapter 17.

Solution to activity 9.1

Find the solution to question 17.1 in F2, at the end of chapter 17.

4. Financial reporting in the USA

The Americans are known for differentiating themselves from other countries when it comes to financial reporting by using US GAAP. For example, when the rest of the world abolished the use of LIFO to value inventory, they simply continued having LIFO as an alternative. These differences make it difficult to perform a meaningful comparison of financial information on a

direct basis, especially nowadays where global business interaction is rife. Lengthy adjustments are often required to compare financial information, which take time and cost money.

However, in October 2004, the IASB and the Financial Accounting Standards Board (FASB) of the USA agreed to develop a common conceptual framework in an attempt to bring IFRSs and US GAAP closer together. Progress is slow, but steady. A number of projects are currently underway to converge US GAAP with IFRS.

Now study the following theoretical sections in F2 chapter 17 of your bespoke BPP reader:

Section	Heading
3	*Financial reporting in the USA*
4	*IFRS vs US GAAP*

Note:

You do not need detailed knowledge of US GAAP; however, you need to know the differences between IFRS and US GAAP.

……..

Activity 9.2

Answer question 17.2 in F2 chapter 17.

Solution to activity 9.2

Find the solution to question 17.2 in F2, at the end of chapter 17.

Enrichment activity 9.3

Visit the website of the IFRS Foundation and the IASB at http://www.ifrs.org/Use-around-the-world/Pages/Jurisdiction-profiles.aspx (accessed on 1 September 2013) to see which countries are currently using IFRS. They provide a high-level summary of the adoption of IFRS around the world. The website of the IFRS Foundation and the IASB also contains further information about IFRSs that you could browse.

…….

International convergence of accounting practices was long overdue. The barriers to harmonisation are slowly being broken down, and global reporting should be standardised across all regions and countries within the next few years.

5. Summary

Having worked through this study unit, you should now be able to

- identify barriers to the convergence of IFRSs and US GAAP as well as the benefits of the convergence
- discuss major differences between IFRS and US GAAP as well as the measures designed to contribute towards their convergence

Review the summary in the chapter roundup at the end of F2 chapter 17 of your reader.

In the next study unit, we will address the increased demand for non-financial reporting, especially surrounding the environment and the society.

SELF-ASSESSMENT THEORY REVIEW QUESTIONS

After working through all the relevant sections in the reader, as well as the guidance and activities provided in this study unit, you should now be able to attempt the following self-assessment theory review question:

THEORY QUESTION 11

After working through the relevant sections in the reader and the material provided in this study unit, you should now be able to answer the quick quiz questions covering some of the theory in this study unit at the end of F2 chapter 17 of your reader.

SOLUTION TO THEORY QUESTION 11

Please find the answers after the quick quiz questions.

STUDY UNIT 10 DEVELOPMENTS IN NON-FINANCIAL REPORTING

1. Introduction

Financial reporting dates back to the early Greek and Arabian days of accounting. Bookkeeping used to be about nothing but numbers. For years, companies only focused on the bottom line (profit), and did not concern themselves with the wellbeing of their people, society or their environment. Lately, there has been increased pressure on companies to report to a wider range of stakeholders in addition to their shareholders.

This pressure has increased as businesses have become more and more advanced in their methods of extracting natural resources from our planet at a much faster rate than in the olden days. This has led to the depletion of natural resources, which also has a major impact on our planet. Recent developments have seen the following being included as part of financial statements:

- management commentary
- environmental reporting
- sustainability
- ethical and social responsibility
- human resource accounting

We base this study unit on F2 chapter 18 of your bespoke BPP reader. We will pay attention to each of these items in turn.

2. Management commentary

Management commentary provides forward-looking information to users of financial statements regarding the organisation's prospects and risks. This has enhanced the quality of financial reports. Exposure drafts have recommended the contents of such commentary to ensure that sufficient and relevant information is provided.

Now study the following theoretical section in F2 chapter 18 of your bespoke BPP reader:

Section	Heading
1	*Management commentary*

Please pay special attention to section 1.2.5, which deals with the advantages and disadvantages of compulsory management commentary.

3. Environmental and sustainability reporting

To increase their profitability, productivity and sustainability, organisations need to set targets and measure their environmental performance (Oracle Corporation 2011:8)[2]. Energy, waste and water usage, for example, need to be monitored and this can result in reduced greenhouse gas (GHG) emissions, "operational efficiency improvements and cost savings."

Accounting and information systems must be able to identify the risks of a negative impact on the environment, and management should seek to mitigate these risks. Efficient systems will estimate costs and revenues in respect of management actions. This is an ongoing process.

Organisations can develop their own initiatives to protect the environment in which they operate, or they can adopt policies from certain standard environmental charters, like the Global Reporting Initiative (GRI) and the Ceres Principles, amongst others.

Companies can manage their impact and efforts to restore the environment through environmental audits. These audits aim to identify whether the company is meeting its targets with respect to the environmental policies it has adopted.

Over the past few years, the initial demand for environmental reporting has broadened into reporting on sustainability. Apart from social and environmental issues, which require transparency, sustainability also implies economic elements, including wages, taxes and performance data. The GRI has published guidelines and sets out a framework for the sustainability report. These include key indicators, which should be transparent to the users of financial statements.

[2] Oracle Corporation. 2011. *An Oracle white paper: Tracking emissions using Oracle Environmental Accounting and Reporting.* Available at: http://www.oracle.com/us/products/applications/green/oracle-environmental-accounting-433571.pdf (accessed on 12 November 2013).

South Africa is a key supporter of environmental and sustainability reporting. The Johannesburg Stock Exchange Limited was the first global stock exchange to make sustainability reporting compulsory. JSE listed companies have been required to submit their annual reports in the form of integrated reports for financial years starting on or after 1 March 2010. Visit http://www.southafrica.info/news/business/king-260111.htm#.UoDwvkv8JUE and https://www.saica.co.za/tabid/695/itemid/2344/language/en-ZA/An-integrated-report-is-a-new-requirement-for-list.aspx (both accessed on 11 November 2013) for more information.

Now study the following sections in F2 chapter 18 of your bespoke BPP reader:

Section	Heading
2	*Environmental reporting*
3	*Sustainability*

Activity 10.1

Answer question 18.1 in F2 chapter 18.

Solution to activity 10.1

Find the solution to question 18.1 in F2, at the end of chapter 18.

Enrichment activity 10.2

Visit the Sustainability website at http://www.sustainabilitysa.org (accessed on 2 September 2013) for more on the latest GRI guidelines and other resources.

4. Reporting on ethics and people (society and employees)

Organisations do not operate in a vacuum. An organisation's location, suppliers, customers and employees make it part of society. People nowadays frown upon organisations focusing solely on maximising shareholder wealth. Organisations are expected to behave ethically and to give back to the society in which they operate. Below are some of the issues an organisation can consider:

Ethical issues include

- setting a reasonable, company-wide minimum wage
- job satisfaction
- honesty to staff and customers
- protection of the environment
- gifts and bribery

Social issues include

- giving back to the community
- donations to schools and orphanages
- community service
- participation in initiatives like Take a Girl Child to Work Day

Now study the following sections in F2 chapter 18 of your bespoke BPP reader:

Section	Heading
4	*The social and ethical environment*
5	*Social responsibility*
6	*Human resource accounting*

Stakeholders are not only concerned about numbers. The concept of the triple bottom line, being people, planet and profits, is becoming increasingly relevant. Sustainability reporting will go a long way to making businesses aware of the consequences of their actions and the need to protect, restore and give back.

Enrichment activity 10.3

Also visit https://www.globalreporting.org/Pages/default.aspx (accessed on 2 September 2013) for developments in reporting.

5. Summary

Having worked through this study unit, you should now be able to

- discuss narrative reporting in general as well as pressures for extending the scope and quality of external reports to include prospective and non-financial matters
- explain how information concerning the interaction of a business with society and the natural environment can be communicated in published accounts
- discuss social and environmental issues that are likely to be the most important to the stakeholders in an organisation
- explain the process of measuring, recording and disclosing the effect of exchanges between a business and society (human resource accounting)

Review the summary in the chapter roundup at the end of F2 chapter 18 of your reader.

SELF-ASSESSMENT THEORY REVIEW QUESTIONS

After working through all the relevant sections in the reader, as well as the guidance and activities provided in this study unit, you should now be able to attempt the following self-assessment theory review question:

THEORY QUESTION 12

After working through the relevant sections in the reader and the material provided in this study unit, you should now be able to answer the quick quiz questions covering some of the theory in this study unit at the end of F2 chapter 18 of your reader.

SOLUTION TO THEORY QUESTION 12

Find the answers after the quick quiz questions.

TOPIC 6 – PROJECT MANAGEMENT

INTRODUCTION

When you were still at school, were you ever part of a project team that had to complete a homework project? Or have you been part of a project in your work environment? If so, you probably had to work with a group of fellow learners or colleagues who each had their own strengths and weaknesses and of whom some were motivated to contribute to the success of the project while others were not doing their part. Can you remember if there was a due date by which the project had to be completed, whether someone assumed the responsibility of group leader (project "manager") and whether different tasks were assigned to different team members? Did the teacher or client enquire about the progress of the project? Did the team discuss what resources were available to them (for instance, how many newspapers and magazines they had between them in which they could search for pictures/if any team member's parents perhaps had a computer and internet access at home/which team member stayed close to a library, etc) and plan what to use these resources for?

Your class or work project team probably applied some of the project management techniques that you will learn about in this topic instinctively. So, if any of the concepts you are now going to learn about seems difficult, try to look at it from the perspective of a project that you have been involved in before. Could you have applied the concepts to your project, and if you could have, how would you have applied them? Could you possibly have improved the success of your project by following the specific approach indicated in this topic? Why, or why not?

You will firstly be introduced to project management concepts, and secondly learn about the project life cycle and project planning. We will then discuss tools and techniques we can use to implement projects and, finally, we will look at how the review of completed projects can assist organisations in improving the outcomes of future projects.

LEARNING OUTCOMES

After studying this topic, you should be able to

- identify and explain various concepts that are related to project management in general and in the context of specific scenarios, such as organisational structures and different models used in project management

- identify different project stakeholders, explain their roles and responsibilities and recommend how they, their expectations and their perceptions could be managed
- compile an outline of the project management process and discuss the features and components of the different stages of the project life cycle
- produce a basic project plan for a basic project, while addressing strategies for managing risk, change and uncertainty and finding a balance between cost, time and quality
- discuss various project management concepts, tools, techniques, structures and frameworks and apply them to evaluate project proposals, project progress, management of the project, management and structure of the project team, etc
- discuss how project management software can assist the project manager in managing the project
- explain the different reports and documents that form part of project management, their components and their purposes
- discuss the post-completion audit and its value as well as continuous quality improvement in a project environment
- contrast and compare project control systems

Note:

We have synthesized these learning outcomes from the detailed outcomes at the end of each study unit. Some concepts and themes are addressed in more than one chapter in your bespoke BPP reader. You should be able to draw together your knowledge concerning the different concepts and themes.

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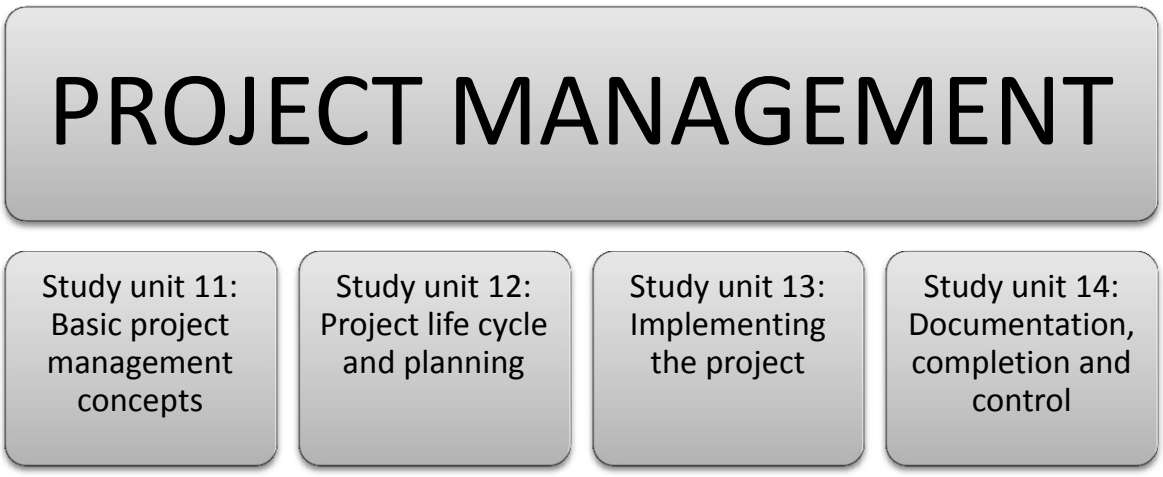
THIS TOPIC CONSISTS OF THE FOLLOWING STUDY UNITS:



STUDY UNIT 11 BASIC PROJECT MANAGEMENT CONCEPTS

1. Introduction

Project management constitutes a significant part of your MAC3703 studies. Many different concepts and models try to explain projects and project management. Understanding these could possibly help you to become a better project manager or project team member – in the workplace, in your own studies, etc.

We base this study unit on **selected sections** from the following chapters in your bespoke BPP reader:

- chapter 6 of E2
- chapter 8 of E2 (section 4 only – the remainder of chapter 8 will be included in study unit 13)

2. Projects, project management and the project manager

When studying this study unit, we recommend that you draw parallels between the new concepts you learn about and your own studies at Unisa. If you look at the definition of a project in your BPP reader, you will see that your studies at Unisa qualify as a project because of the following:

- It has a "defined beginning and end". The beginning could have been when you decided to study towards the specific qualification at Unisa, and the end can be when you graduate.
- It is "carried out to meet established goals". You are most probably studying because you want to obtain a specific qualification, become a management accountant and/or progress toward becoming a member of a professional body, like CIMA.
- It involves certain cost, schedule and quality objectives. Most students do not have unlimited budgets and time available. Maybe you use a student loan to fund all your study-related expenses; maybe you have set yourself a target of completing your studies within three or four years; maybe you are aiming for an overall mark of, let's say, 65%, or simply to pass.

The sections you are going to study next will provide a theoretical background on project management concepts. You will be introduced to Maylor's 7S model for project management

and to critical success factors for projects. The responsibilities and required attributes of a good project manager will also be discussed.

Now study the following theoretical sections in E2 chapter 6 of your bespoke BPP reader and attempt the activities:

Section	Heading
1	*The nature of project management*
2	*The project manager*

Activity 11.1

a. By now you should know that Maylor's 7S model is an adaptation of the McKinsey 7S model for use in **project** management. Perform an internet search containing "McKinsey", "7S" and "organisation" and scroll down to have a quick look at some of the results you obtain.

b. Search the internet for a picture of the McKinsey 7S framework and determine which (if any) of the 7S's has a different name in Maylor's adapted version.

Solution to activity 11.1

a. This is not a question as such – we simply want you to note that the McKinsey model applies to managing the **organisation**.

b. Maylor's "stakeholders" differs from McKinsey's "shared values".

Activity 11.2

Answer question 6.1 in E2 chapter 6.

Solution to activity 11.2

Find the solution to question 6.1 in E2, at the end of chapter 6.

3. The identification of projects

Not all potential projects are worthwhile to undertake. Some projects might even be in conflict with the strategic direction in which an organisation is moving. Organisations need to perform certain "tests" on proposed projects before they decide whether or not to embark on the project. The section you are going to study now will look at feasibility studies, risk management and SWOT analyses as tools to assess whether or not it is desirable to undertake a proposed project.

Now study the following theoretical section in E2 chapter 6 of your bespoke BPP reader and attempt the activities:

Section	Heading
3	*Identifying projects*

Activity 11.3

Answer question 6.2 in E2 chapter 6.

Solution to activity 11.3

Find the solution to question 6.2 in E2, at the end of chapter 6.

Activity 11.4

You will note in the text you had to study that a proposed project should be

- suitable
- acceptable and
- feasible

to be worthwhile to undertake.

REQUIRED

Explain the meaning of each of the three terms.

Solution to activity 11.4

Suitable – appropriate for its purpose
Acceptable – meeting certain minimum standards
Feasible – able to meet its objectives cost effectively

4. The PRINCE2 model

One of the models we can use in project management is the PRINCE2 model. The text you have to study will explain what the acronym stands for and the components and processes of project management on which the model is based.

If you search the internet for images on PRINCE2, you will probably find a large variety of diagrams, many of which have been prepared by consulting firms and training providers.

Now study the following section in E2 chapter 6 of your bespoke BPP reader and attempt the activities:

Section	Heading
4	*PRINCE2*

Activity 11.5

For each of the following, identify the relevant PRINCE2 component or process:

a. determining whether we are on track with a specific stage of the project

b. the layers of management responsibility belong to this component

c. holding a meeting to ensure that our project work has been accepted

d. a thought process for what we want to achieve with the project and why this achievement will be useful will form part of this component

Solution to activity 11.5

a. controlling a stage
b. organisation
c. closing a project
d. business case

Did you notice that PRINCE2 can also be used for project control purposes? You will learn more about project control in the final study unit of this topic.

5. The structure of the organisation and how it is used in project management

Certain organisations are more decentralised in their decision making than others. Some of these organisations are even referred to as having a "flat" organisational structure. In this context, "flat" means that there will be only a few levels in the management organogram.

In general, it can be beneficial if the members of a project team have a certain level of autonomy in their decision making because of their hands-on involvement in the processes. But which organisational structures are project management friendly, and how can each organisational structure benefit or be an obstacle to management of the project?

Now study the following section in E2 chapter 6 of your bespoke BPP reader and then attempt the activity:

Section	Heading
5	*Projects and organisational structure*

Activity 11.6

State one advantage and one disadvantage of each of the following organisational structures with regard to project management:

a. lightweight matrix management
b. heavyweight matrix management
c. pure project organisation

Solution to activity 11.6

Organisational structure	Advantage	Disadvantage
a. Lightweight matrix management	Improved teamwork through shared responsibility for success	Possible conflict between project and departmental priorities
b. Heavyweight matrix management	Dedicated time and attention of seconded team members	Temporary staff loss for department from which team

		members are seconded
c. Pure project organisation	Labour cost savings	Lack of continuity over project life

6. Project team

The project manager and his team will be responsible for most of the project implementation activities. If the wrong team members are appointed, or if the team is not appropriately managed, this could jeopardise the success of the project.

Study the following section in E2 chapter 8 of your bespoke BPP reader and attempt the activities:

Section	Heading
4	*The project team*

Activity 11.7

Princess Publishing (Pty) Ltd. publishes children's books. A project manager is assigned to each manuscript the company receives. If the manuscript is accepted, the project manager has to appoint and manage a project team to take the manuscript through all the processes, from receipt to printing. Else, the project manager needs to inform the author that the manuscript has not been accepted.

The company received a complaint from an author that he had been notified eight months ago that he would receive feedback on his submission in four months' time, but have not heard from the publisher since.

Top management arranged a meeting with the team responsible for the specific project. The project manager and his team started shifting the blame around, and the secretary captured the following quotes by team members in the minutes of the meeting:

- "… did not even know about the manuscript…"
- "…was not informed about the deadlines…"
- "…too many other tasks…"
- "…lack of leadership…"

- "…never appreciates my work…"
- "…I have to do all the work…"
- "…I thought it had already been done…"
- "… it's not *my* responsibility…"
- "Who is the project manager?"
- "…I don't know how to do it!"

REQUIRED

Identify possible shortcomings in the project manager's management of the project team and suggest what he can do to try and rectify his mistakes in this regard. (Assume the team members' opinions have some merit.)

(*Adapted from CIMA, E2, November 2011*)

Solution to activity 11.7

a. **A lack of leadership and visibility.** – The project manager should improve his leadership skills and be more visible and involved in the project. He should set aside sufficient time for guiding, encouraging and providing feedback to team members.

b. **A lack of/Ineffective communication.** – The project manager should set up proper mechanisms for communication. There should be a multi-way flow of information between the manager and his team members concerning the project plans, changes, progress, etc. One way in which he could improve in this regard, is by organising frequent review and progress meetings with individual team members and the team as a whole. He should also clearly communicate the goals, objectives, responsibilities and roles to all the team members.

c. **Not setting clear goals and objectives.** – It is not clear whether the manager did not set goals and objectives simply did not communicate them at all or did not communicate them clearly and effectively. The manager should ensure that the team understands the purpose of the project as well as their own tasks and responsibilities and how it will benefit them if the project is a success. He will have to set and communicate revised deadlines for tasks, as the original deadlines were clearly not met.

d. **Not promoting group cohesiveness and collaboration.** – The team members seem to be arguing about who is responsible for what instead of co-operating to make the project a

success as a whole. The blame shifting is an indication that the team is probably not working together well. The manager has to make sure some teambuilding takes place throughout the remainder of the project's duration (for example, by organising a social event where team members can get to know each other better in an informal way), that conflicts are resolved appropriately and that teamwork is rewarded.

e. **Not allocating clear team roles.** – Team members seem to be confused as to who is responsible for what. The manager should make sure that each team member understands how he/she can contribute to the project and its success and that the different roles are properly distinguished so that work will not be duplicated or omitted.

f. **Appointing the wrong team members.** – The manager has possibly not selected team members with the required skills or the available time to perform project tasks. Additional supervision and training can improve the situation, as well as adding more team members to assist those who have a lack of capacity or experience for performing their tasks.

g. **Not supporting and motivating the team sufficiently.** – If some team members don't even know who the project manager is, he is possibly not involved enough. He should continuously encourage team members throughout the remainder of the project and determine what motivates each team member so that he can create an inspiring environment and increase enthusiasm. He should be available to advise and assist team members and should show his appreciation for good work.

h. **Not supervising the team properly.** – He will have to monitor the progress and quality of the work of individuals on a more frequent basis and deal with the challenges throughout the rest of the project as they are identified, for instance by providing assistance as required and ensuring that mistakes are rectified and tasks are completed by their (revised) due dates.

Note:

You could also have identified other possible shortcomings and made other suggestions. Also take note that we could have added questions concerning the other stakeholders in the project, for example, the author of the manuscript or the senior management of the company.

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7. Summary

Please see the chapter roundup at the end of every chapter referred to (after the text, but before the quick quiz questions) for a brief summary of the concepts discussed in this study unit.

In this study unit, you learnt to

- identify and explain various concepts that are related to project management in general and in the context of specific scenarios, such as organisational structures and different models (e.g. 7S, Project Management Body of Knowledge (PMBOK), PRINCE2) used in project management
- describe the duties, responsibilities and skills of the project manager
- discuss criteria for identifying acceptable projects
- discuss how project teams are selected, managed and structured

In the next study unit, we will pay attention to the different stages of a project and what they usually entail. We will then look at project planning (which is likely to apply to each of the stages, but is grouped with the components of the project design stage) in more detail.

SELF-ASSESSMENT THEORY REVIEW QUESTIONS

After working through all the relevant sections in the reader, as well as the guidance and activities provided in this study unit, you should now be able to attempt the following self-assessment theory review question and the self-assessment question below this theory question.

THEORY QUESTION 13

Answer the quick quiz questions at the end of E2 chapter 6.

SOLUTION TO THEORY QUESTION 13

Find the solutions to the quick quiz questions directly after the quick quiz in E2 Chapter 6.

SELF-ASSESSMENT QUESTIONS

Now answer the following self-assessment question:

QUESTION 12

Answer question 6 in the exam question bank of E2.

SOLUTION TO QUESTION 12

Find the solution to question 6 in the exam answer bank of E2.

STUDY UNIT 12 PROJECT LIFE CYCLE AND PLANNING

1. Introduction

In the previous study unit, various project management concepts were introduced and explained. You will recall from topic 1 that individual goods, services, **projects** and customers all have life cycles. We will now look at the project life cycle and the stages, components and activities it consists of. Though study unit 11 touched on project risk management, we will now look at this in more detail. Finally, we will look at project stakeholders other than the project manager and his team mentioned in study unit 11.

We base this study unit on **selected sections** from the following chapter in your bespoke BPP reader:

- chapter 7 of E2

2. Life cycle

The section you are going to study next will explain the project life cycle and its different stages, from identifying the specific need that the project should address to the conclusion of the project.

Now study the following section in E2 chapter 7 of your bespoke BPP reader and attempt the activities:

Section	Heading
1	*The project life cycle*

Activity 12.1

Answer the following theoretical questions about the project life cycle:

a. In which stage of Maylor's 4D model will project planning commence?

b. In which stage of Maylor's 4D model will you perform the bulk of the project operations?

c. In the project management maturity model, which organisational level is regarded as the best equipped to implement a project?

d. Under which circumstances will an organisation possibly need to compile a communication plan as part of the design stage of a project and why?

e. Under which circumstances will it be of the utmost importance to complete documentation as part of developing the process

Solution to activity 12.1

a. Stage 1: defining the project
b. Stage 3: delivering the project
c. Level 4 organisations
d. When the project stakeholders are
    - numerous (large in number), and
    - heterogeneous (different in nature), as the nature and extent of the information the stakeholders will require are likely to vary a lot
e. When
    - quality certification issues exist, or
    - the user requires operating documentation

Note:

The business environment is dynamic, and one cannot expect a clear-cut end to one stage before the beginning of the next stage. For example, while students are in the delivery stage of their projects of studying towards a qualification at Unisa, they might have to adjust their project planning if they unexpectedly find a certain module difficult. The students will have to adjust to the unforeseen circumstances by adjusting their planning, for example by allocating more time to the module, or by increasing their budget for making more phone calls to the lecturer.

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Reflective activity 12.2

"The different stages of the project life cycle can also be applied to your studies at Unisa." As mentioned in study unit 11 of this topic, you can also regard your own studies at Unisa as a project.

REQUIRED

Take part in the online discussion on the project life cycle of your own studies. Indicate how some of the concepts you have learnt about in this section apply to your own "project". Keep your discussions short and to the point.

3. Project risk management

In study unit 11, we introduced you to project risk, with reference to the difference between risk and uncertainty, as well as to the importance of risk management when it comes to projects. Now we will look at project risk management in more detail: the nature of risks, the different steps in the risk management process, the risk assessment matrix and the common reactions to risk will be discussed.

Note:

We introduced you to risk, uncertainty and risk management in your MAC2601 and MAC2602 studies.

In the study unit in MAC2601 on probabilities, we emphasised how important analysing risk and uncertainty is in decision making. You will recall that we explained the difference between risk and uncertainty in MAC2601 as follows: "Risk entails the possibility of a negative consequence, e.g. the equipment may break down in the middle of a crucial order, or sales may be less than the break-even value. Uncertainty can be applied to potential positive outcomes as well, e.g. the probability of you winning the Lottery is one in 45 million. This is uncertainty, there is no risk attached."

In MAC2602, you learnt about the risk management process and the interaction between risk and strategy development.

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Now study the following section in E2 chapter 7 of your bespoke BPP reader and attempt the activities:

Section	Heading
2	*Managing project risk*

Enrichment activity 12.3

Refer back to section 3 in E2 chapter 6 of your bespoke BPP reader, dealing with identifying projects (see study unit 11). You will find that risk is distinguished from uncertainty in that it is quantifiable and manageable. However, in E2 chapter 7 of your bespoke BPP reader, you will find that some risks can indeed be unquantifiable.

The MAC2601 explanation revisited here and the broad definition of risk in E2 chapter 6, section 2, of your bespoke BPP reader agree that risk is associated with unwanted outcomes.

But what do others say about the differences between risk and uncertainty?

Typing the following URL into your browser and press enter for an interesting read on risk and uncertainty:

Kastelle, T. 2013. *A brief introduction to uncertainty in business*. Available at: http://timkastelle.org/blog/2013/03/a-brief-introduction-to-uncertainty-in-business/ [accessed on 30 September 2013]

Activity 12.4

Based on the risk assessment matrix in your BPP reader, indicate the order of importance of the following risks with regard to developing a risk contingency plan (from highest priority (1), to lowest priority (5), when it comes to developing strategies). Explain your answer.

Risk A: a risk with a low potential impact and a high likelihood
Risk B: a risk with a medium potential impact and a high likelihood
Risk C: a risk with a low likelihood and a medium potential impact
Risk D: a risk with a high likelihood and a high potential impact
Risk E: a risk with a medium potential impact and a medium likelihood

Solution to activity 12.4

The higher the combined measure of likelihood and consequences, the higher the priority to develop a strategy for mitigating the risk. Therefore, the above will be ranked from 1 (highest) to 5 (lowest) priority as follows:

1. Risk D, as it falls in the VH quadrant of the matrix.

2. Risk B, as it falls in one of the H quadrants of the matrix.
3. Risks A and E, as they both fall in M quadrants.
5. Risk C, as it falls in an L quadrant of the matrix.

Note:

We have omitted a priority level of four from the above solution, based on risks A and E both being the third most important risks for the risk contingency plan. The next risk (C), is therefore in fifth place. If you assigned a three to both risks A and E, and a four to C, we would also accept your answer.

…….

4. Stakeholders in the project

Just like an organisation in general, a project has certain stakeholders that each has an interest in the project or can influence it. These stakeholders do not all affect the project in the same way, neither does the project affect them in the same way. The project manager can classify the stakeholders into different categories, assign different names to them, etc, but ultimately has to manage their expectations of and involvement in the project properly for the project to succeed.

Activity 12.5

List 5 – 10 stakeholders in your project of "studying towards a _____ qualification at Unisa".

Solution to activity 12.5

The list of stakeholders will depend on your individual circumstances. Some of the stakeholders you could have identified include family or friends, lecturers, Unisa, academic researchers, fund providers (e.g. a supplier of a bursary or a loan), administrative personnel at Unisa, your current/future employer, suppliers of prescribed study material, the professional body you would like to join, etc. Of course, you will be a key stakeholder. All the identified parties should have an interest and/or role in the project.

Note:

The stakeholders in your "study project" are likely to differ in their level and nature of interest, bargaining power, etc.

For example, there could be a difference between the final marks you, your family and your sponsor require from you. If you want to study further, Unisa could also require a higher mark than merely a pass mark.

Furthermore, the local book seller may be less interested in whether or not you pass than your family or sponsor would be.

Some stakeholders will have a bigger say in your studies than other – an employer could, for instance, require that you pass at least some of each semester's modules in order to grant you special study leave for the next semester's exams. A friend is unlikely to demand success from you or to apply a lot of pressure, but will be happy if you pass.

……

Now study the following section in E2 chapter 7 of your bespoke BPP reader and attempt the activities:

Section	Heading
3	*Roles and management of project stakeholders*

Activity 12.6

Answer question 7.1 in E2 chapter 7.

Solution to activity 12.6

Find the solution to question 7.1 in E2, at the end of chapter 7.

5. Summary

Please see the chapter roundup at the end of the chapter referred to (after the text, but before the quick quiz questions) for a brief summary of the concepts discussed in this study unit.

In this study unit, you learnt to

- compile an outline of the project management process and discuss the features and components of the different stages of the project life cycle

- propose strategies for identifying and managing risk, change and uncertainty
- identify different project stakeholders, explain their roles and responsibilities and recommend how they, their expectations and their perceptions could be managed

In the next study unit, we will discuss different tools and techniques that can be used in implementing the project and look at how computer software can assist in this.

SELF-ASSESSMENT QUESTIONS

After working through all the relevant sections in the reader, as well as the guidance and activities provided in this study unit, you should now be able to attempt the following self-assessment questions:

QUESTION 13

Answer question 7 in the exam question bank of E2.

SOLUTION TO QUESTION 13

Find the solution to question 7 in the exam answer bank of E2.

QUESTION 14

a. Answer the quick quiz questions at the end of E2 chapter 7.

b. Refer back to your answer to Activity **12.5** (the stakeholders in your own "study project"). Indicate the following for each stakeholder:

    - whether they are a process or an outcome stakeholder
    - what their role is (e.g. project owner, project champion, etc)
    - why it is important for you to pay attention to their requirements
    - how you are likely to communicate with them regarding the status of the project, etc

SOLUTION TO QUESTION 14

a. Find the solutions to the quick quiz questions directly after the quick quiz in E2 chapter 7.

b. Again, your answer will depend on your individual circumstances. However, you can refer to the possibilities below for an **example**:

Stakeholder	**Process/ Outcome**	**Role**	**Why their requirements are important**	**Communication method**
Parents	Process and outcome	Project support team, perhaps project sponsor	I want to keep them happy and make them proud.	Visits, telephone calls, letters
Provider of bursary	Outcome	Project sponsor	If I don't meet their expectations, they may withdraw the funds I use to pay for my studies and this might put financial pressure on me or my family.	Periodic e-mail or telephonic report of my academic results
Employer	Process and outcome	Project sponsor, perhaps project owner, project board, user	If I don't obtain my qualification within a predetermined time span, my contract will not be extended.	Performance meetings
Lecturers/ Unisa	Process and outcome	Quality managers, specialists	If I don't meet the minimum standards they set, I cannot be awarded the qualification.	E-mails, written exams, online discussion, telephone calls, appointments, assignments

Stakeholder	Process/ Outcome	Role	Why their requirements are important	Communication method
Myself	Process and outcome	Project owner and project manager	If I don't make progress, it will take me longer to qualify to apply for my dream job.	Own thoughts

Reflection

Think of possible reasons why we have classified the project stakeholders in the example solution as process stakeholders, outcome stakeholders, or both.

STUDY UNIT 13 IMPLEMENTING THE PROJECT

1. Introduction

In the previous study units, the project life cycle was discussed, with specific emphasis on project planning. We now move on to the third main phase of the project life cycle: implementation. Various project management techniques and many of the concepts involved in the completion of the project will be discussed and applied in this study unit.

You learnt about key stakeholders in study units 11 and 12. Now we will also look at methods of reporting information about the project to these stakeholders, as well as documents to be compiled for internal record keeping, etc.

We base this study unit on **selected sections** of the following chapter in your bespoke BPP reader:

- chapter 8 of E2

2. Tools and techniques for planning and controlling projects

There are several tools and techniques available that can assist you in managing a project. In your study project, you could for example use the following:

- a **work breakdown structure** to split your qualification into manageable modules
- a **project budget** and **budgeting worksheet** to allocate the funds you have available between different tasks
- a **Gantt chart** to see how the estimated and actual time for different tasks compare and whether you are behind, on time or ahead of schedule
- **network analysis** to determine the smallest possible time span of your "study project"
- **PERT** to deduce certain key statistics, like the probability of meeting the project deadline

Of course, the above are not the only tools and techniques available. Study the following section in E2 chapter 8 of your bespoke BPP reader and attempt the activities to learn more about these and other tools and techniques:

Section	Heading
1	*Management tools and techniques*

Note:

You will notice some similarities and differences between the decision trees you studied in MAC2601 and network diagrams, for example:

- Both contain nodes. In a decision tree, a node will represent a decision or an event, whereas a node in a network diagram can in some instances represent an event (activity-on-arrow presentation) and in others an activity (activity-on-node presentation).
- In MAC2601, the decision tree node on the far left-hand side represented the event/decision that took place first. In MAC3703, the node on the far left-hand side in a network diagram also indicates the first activity/event that will take place. Both diagrams flow from left to right. Just be careful – the fact that one network diagram node is drawn exactly below another does not mean that they will necessarily have the same earliest event time (EET) or latest event time (LET).
- You will find branches (solid lines) in decision trees, whereas network diagrams contain arrows. Depending on the presentation style, an arrow in a network diagram can represent an activity or indicate a path or a portion of one or more paths.

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Note:

You will also need to understand the following concepts to be able to answer some of the network analysis questions:

Acceleration
Speeding up a project to the point where the cost savings no longer exceed the cost of saving time (i.e. up to the point where speeding up the project will no longer result in a "profit", or where net savings equals zero).

Accelerated time
This is the decreased time associated with an activity. It is often used to indicate the minimum level of time to which the duration of an activity can be reduced (not necessarily the optimal time).

Cost slope

The amount of cost to be incurred for each increment of time saved.

Latest completion time (**LCT**)

This is the latest time by which the activity can be completed without delaying the project as a whole. It is the total duration of the critical path, less the longest route from the end of the activity to the end of the project and is also called the latest finish time or date.

Earliest completion time (**ECT**)

This is the earliest time by which the activity can be completed. ECT can be calculated as the duration of the longest route from the beginning of the project to the end of the activity and is also called the earliest finish time or date.

Slack

This is the same as the total float. It can be calculated in either of the following ways:

- LCT – ECT
- LCT – earliest start time – activity duration

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Activity 13.1

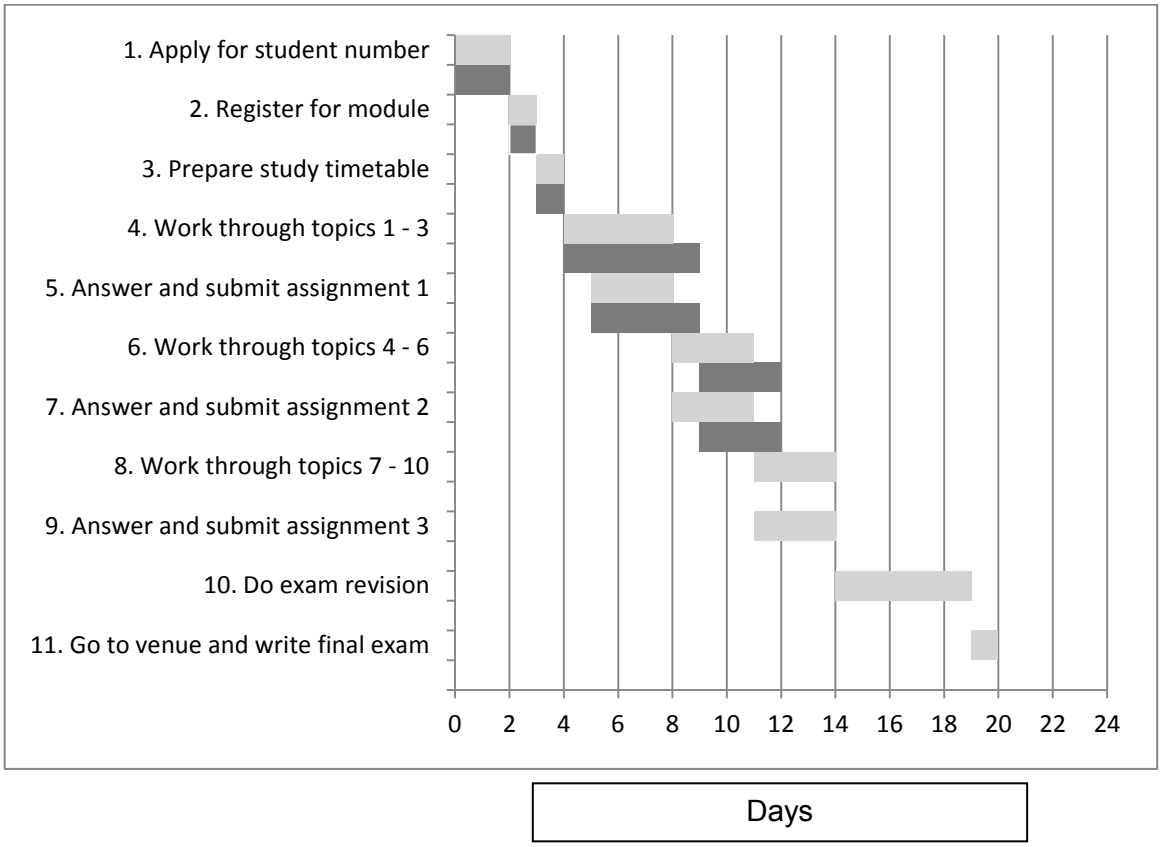
Answer questions 8.1 and 8.2 in E2 chapter 8.

Solution to activity 13.1

Find the solutions to questions 8.1 and 8.2 in E2, at the end of chapter 8.

Activity 13.2

You have assisted a friend by preparing the following Gantt chart for an online course she is doing:



Legend:

Estimated

Actual

REQUIRED

Please advise your friend on the following:

a. How many days has she spent on the entire project this far, assuming no current activities are running behind schedule?

b. What is the total estimated duration of the project in days?

c. Which activity or activities took longer than planned and how much longer did it/they take?

d. Which activities can take place concurrently (at the same time)?

e. What is the earliest day on which she could complete activity 9 if this activity takes as long as originally planned?

f. If her exam date is fixed and cannot take less time than planned, on which activity's or activities' duration will she have to cut down if she cannot start exam revision before she has

worked through all the topics and answered and submitted all the assignments? (Assume she can only cut full days out of the schedule.)

g. If your friend could move the exam date, by how many days will she have to postpone the exam if everything goes according to plan for the remainder of the project?

Solution to activity 13.2

a. 12 days
b. 20
c. Activities 4 and 5; each by one day
d. Activities 4 and 5 (only partially)
   Activities 6 and 7
   Activities 8 and 9
e. Day 15
f. Either activities 8 AND 9, or activity 10
g. One day

Notes:

- For both activities 4 and 5, the actual days exceed the estimated days by one day. As these activities also took place concurrently, activity 6 (which was dependent on the completion of activities 4 and 5) started **one** day later than planned (and finished one day later than planned, as it still took three days to complete as per the initial planning). Activity 7 (running concurrently with activity 6) was also dependent on the completion of activities 4 and 5 and therefore also started and finished late. We can continue like this looking at the chart to see that the exam date will either have to be postponed by one day, or that an activity on which the final exam activity is dependent will have to be shortened by one day. Past activities cannot be reduced in duration after they have taken place. (We have actual figures up to activities 6 and 7 in the Gantt chart, and no information was given regarding these activities being only partially completed, so they must be fully completed by now.) So, activities 8, 9 and 10 are the only remaining options for "catching up" the lost time.
- Have you noticed that reducing the duration of only activity 8 **or** activity 9 in question f will not result in catching up before the exam date? This is because both activities 8 **and** 9 have to be fully completed before activity 10 can start and they take place at the same time. If the duration of only activity 8, for example, is reduced to two days, activity 9 will

still take three days, revision will still start one day late, and your friend will not be ready by the exam date.

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Reflection

Suppose your friend suddenly realised that she could not perform activities 8 and 9 at the same time. What would be the effect on your answer to f and on the number of days that would have to be cut from the schedule?

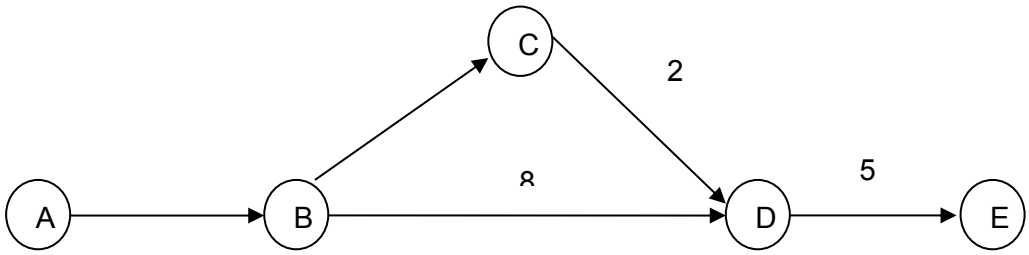
Note:

If she cannot perform activities 8 and 9 at the same time, she will need to fit in an additional three days before the exam date, as well as catch up regarding the day she fell behind earlier in the project. She will thus have to cut four days from the schedule and can cut these days based on one of the following options:

- four days from activity 10
- three days from activity 10, plus one day from either activity 8 **or** 9
- two days from activity 10, plus two days from either activity 8 **or** 9
- two days from activity 10, plus one day from each of activities 8 **and** 9
- one day from activity 10, plus one day from activity 8 and two days from activity 9
- one day from activity 10, plus two days from activity 8 and one day from activity 9.
- two days from activity 8 and two days from activity 9 (She cannot eliminate an entire activity, so she will only be able to cut a maximum of two days each from activities 8 and 9.)

Activity 13.3

Assume the following network diagram applies to a project. The activity durations are shown in weeks.



REQUIRED

a. Identify all paths through the network.

b. Calculate the duration of each path.

c. Identify the critical path.

d. Identify the immediately preceding activity for each activity.

e. Calculate the earliest start time for each activity.

f. Calculate the latest start time for each activity.

g. Calculate the slack of each activity.

h. Calculate the total float on each activity.

i. Assume the following acceleration costs per week for the different activities and that all activities can be accelerated in increments of one week and to a minimum duration of one week (if the overall project is shorter, direct cost savings amount to R350 per week):

A→B:	R450
B→C:	R150
B→D:	R100
C→D:	R400
D→E:	R200

Accelerate the project in the most effective way.

Note:

This is just a basic exercise to help you grasp some of the principles. We have added some explanations between brackets in the solution.

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Solution to activity 13.3

a. ABCDE
ABDE

b. ABCDE = 6 + 3 + 2 + 5 = 16
ABDE = 6 + 8 + 5 =19

c. ABDE (the route that takes the longest time)

d.
A→B:	None
B→C:	A→B
B→D:	A→B
C→D:	B→C
D→E:	C→D and B→D

e.
A→B:	Week 0 (as there are no preceding activities)
B→C:	Week 6
B→D:	Week 6
C→D:	Week 9 (6 + 3 = 9)
D→E:	Week 14 (A→B, B→C, B→D and D→D all have to be completed before D→E can begin, so we calculate the longest duration up to the start of D→E, namely 6 + 8 =14)

f. For this question, it is much easier to start with the last activities and finish with the first.

D→E:	Week 14 (19 – 5 = 14)
C→D:	Week 12 (14 – 2 = 12 or 19 – 5 – 2 = 12)
B→D:	Week 6 (14 – 8 = 6 or 19 – 5 – 8 = 6)
B→C:	Week 9 (12 – 3 = 9 or 19 – 5 – 2 – 3 = 9)
A→B:	Week 0 (Will this be 6 – 6 = 0 or 9 – 6 = 3? We take the shortest duration here, as our project will not finish on time if this activity only starts in week 3!)

g. A→B: ECT = week 6; LCT = 19 – 8 – 5 = week 6;
slack = LCT – ECT = 6 – 6 = 0 weeks.

B→C: ECT = 6 + 3 = week 9; LCT = 19 – 2 – 5 = week 12;
slack = LCT – ECT = 12 – 9 = 3 weeks.

B→D: ECT = 6 + 8 = week 14; LCT = 19 – 5 = week 14;
slack = LCT – ECT = 14 – 14 = 0.

C→D: ECT = 6 + 3 + 2 = week 11; LCT = 19 – 5 = week 14;
slack = LCT – ECT = 14 – 11 = 3 weeks.

D→E: ECT = 6 + 8 + 5 = week 19; LCT = 19 – 0 = week 19;
slack = LCT – ECT = 19 – 19 = 0.

h. 1. B→D:

Cost	3 x R100 = R300
Savings	3 x R350 = R1 050
Net savings	1 050 – 300 = R800

(We can only shorten the duration of the project as a whole if the duration of the critical path is shortened. Activities A→B and D→E on the critical path are common to both paths in the network diagram, so by accelerating these activities, we can accelerate both paths. But B→D is the cheapest activity to accelerate on the critical path. If we accelerate this activity on its own and to less than the 3 + 2 = 5 weeks that B→C and C→D will take in total, ABCDE will become the critical path, and it will not be effective to accelerate B→D further at this stage.)

2. D→E:

Cost	4 x R200 = R800
Savings	4 x R350 = R1 400
Net savings	1 400 – 800 = R600

(Both paths are now at a total duration of 16 weeks. So we need to accelerate both paths at the same time in order to save more time on the project as a whole. Activities that are common to both paths should be considered first: will it be cheaper to accelerate these common activities than to accelerate the two cheapest options on the sections that are not common? The sections that are not common to both paths are B→C and C→D on ABCDE and B→D on ABDE. C→D is cheaper to accelerate than B→C, so we choose C→D on ABCDE and B→D on ABDE. Per week, this amounts to R150 + R100 = R250. This is less than the cost of accelerating A→B, but more than that of D→E, so D→E will be next.)

3. C→D on ABCDE and B→D on ABDE:

Cost	2 x R250 = R500
Savings	2 x R350 = R700
Net savings	700 – 500 = R200

(We cannot reduce C→D to less than one week.)

~~4. A→B:~~

Cost	5 x R450 = R2 250
Savings	5 x R350 = R1 750
Net savings	1 750 – 2 250 = (R500)

(Acceleration now results in a net cost, so it is not effective to accelerate A→B. We stop our acceleration after C→D and B→D were accelerated as specified above.)

(B→D + C→D = R100 + R400 = R500. Therefore it is better to accelerate A→B at R450 per week.)

Note:

Did you notice the following from the above?

- There is no slack on any of the activities on the critical path. Only activities B→C and C→D have slack and they are not part of the critical path.

- The earliest start time of each of the activities on the critical path (here A→B, B→D, D→E) is equal to the latest start time of that activity.

- When we refer to the "activity that is the cheapest to accelerate" in the above example, we are actually referring to the lowest cost slope. Suppose we can reduce one activity from three weeks to one week at a **total** cost of R400, and another activity from five weeks to four weeks at a cost of R300. Then the first activity is the cheapest to accelerate, as it has the smallest cost slope (400 / 2 weeks = R200 per week compared to the second activity's cost slope of R300 per week).

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3. Computer software

We will now see how computer programmes can assist with project management, e.g. by simplifying the project by means of automated calculations. The LET and EET that you have learnt about in the previous section are examples of calculations that can be automated. The next section you have to study mentions packages like Microsoft Project, of which there were two editions in 2013: Standard and Professional.

Now study the following section in E2 chapter 8 of your bespoke BPP reader and attempt the activities:

Section	Heading
2	*Project management software*

Enrichment activity 13.4

Search the internet for a few of the project management terms that you have come across so far. Add the word "package" or "software" to each term you search for, for example, "PERT software". Note the variety of software that is available for managing projects.

Activity 13.5

A local municipality in the Eastern Cape is considering the use of project management software in an attempt to address some of the general shortcomings of the manual system they are currently using to manage their large projects.

REQUIRED

Explain how project management software can assist the municipality in overcoming some of the general weaknesses of managing a large project 100% manually.

(*Adapted from CIMA, E2, November 2010*)

Solution to activity 13.5

Weakness 1: Preparing manual estimates for budgeting and providing useful information for cost control purposes can become very complex and time-consuming when large projects with extensive data are involved.

Project management (PM) software can assist the municipality with its cost planning and control, as it makes it easier to retrieve data of other, similar projects and to adjust it to provide estimates of future costs of the project or benchmarks against which past costs can be measured. Complex statistical techniques used in estimation can become more user-friendly by means of automated calculations. The software can also provide a continuous comparison of actual and budgeted costs ─ for the project and even for small portions thereof ─ to avoid overspending. This will be crucial for the municipality, as its income is to a large extent directly or indirectly sourced from the local population and fruitless and wasteful expenditure will also have to be reported.

Weakness 2: Manual processes leave a lot of room for human error.

Although human error can also step in when data is captured on a computer, the PM software is able to handle the difficult and extensive calculations often associated with large projects with accuracy.

Weakness 3: Large, complex projects are unmanageable.

Projects can be so large and complex that they become very difficult to manage as a whole. Trying to do this manually can be even harder. PM software can assist in breaking down the large project into more manageable chunks, each with its own planning and control functions.

Weakness 4: Planning and scheduling can become very difficult to do manually and is very time-consuming.

Large projects may involve so many activities, of which some are also interdependent, that it can become extremely difficult and time-consuming to schedule (possibly hundreds or thousands of) activities, network analyses, etc by hand. PM software can automatically prepare network diagrams, Gantt charts, detailed task lists and calendars based on inputs from the project manager or other involved parties. PM software can also assist with resource allocation, determining start and completion dates, calculating expected completion times and determining what the effect of certain changes to the project would be. Changes to charts, lists, calculations, etc can also update automatically immediately when the information on which they are based changes. (The project manager can easily forget about this in a manual system or have difficulties determining all the factors that will be affected by the change.) The monitoring of actual against planned progress also becomes easier with PM software, and this can lead to problems being solved timeously.

Weakness 4: In large, complex projects it is easier to allocate available resources incorrectly, or to fail to identify or correctly calculate the need for resources.

The large and multiple projects of the municipality are most likely to involve a large labour force and lots of equipment and materials, which could make resource allocation more difficult than in a small, individual project. PM software usually requires input regarding the resources available for a project (including what will be available and when). The PM software can analyse this information and present it in a more useful way. Proper resource planning is a critical success factor for projects, and the software can help to ensure that the right resource is directed to the right process at the right time. PM software can prepare resource histograms which enable the project manager to see or monitor where resources are used or required throughout the project: it creates a visual representation for the municipality to use in reallocating resources and sourcing additional resources as required.

Weakness 5: Where large and many projects are involved, manual preparation of reports can be very time-consuming.

Preparing similar or frequently used report formats (standard reports) by hand every single time the project manager needs to report the status or anything else about the project to stakeholders can become tedious, repetitive and can waste time. The automatic or semi-automatic generation of certain reports, like progress, budget and resource reports, as well as financial and work breakdown structure (WBS) reports can save the municipality precious time. It is also far less time-consuming to adjust the layout of reports electronically based on stakeholder needs or preferences (called tailored reporting).

4. Summary

Please see the chapter roundup at the end of the chapter referred to (after the text, but before the quick quiz questions) for a brief summary of the concepts discussed in this study unit.

In this study unit, you learnt to

- identify the components of and deliverables for a basic project and compile a basic project plan, including a project budget for cost, quality and time
- plan and manage the duration of a project using tools such as Gantt charts and critical path analyses

- briefly discuss methods for dealing with project uncertainties
- discuss the advantages and disadvantages of PM software and how it can assist the project manager in managing the project

In the next study unit, we will be looking at some important project management documents and reports as well as project control systems. We will also address the few remaining requirements for concluding the project, how to handle challenges during the project and how to apply what we have learnt during a project to be more successful with future projects.

SELF-ASSESSMENT THEORY REVIEW QUESTIONS

After working through all the relevant sections in the reader, as well as the guidance and activities provided in this study unit, you should now be able to attempt the following self-assessment theory review question and the self-assessment questions below this theory question.

THEORY QUESTION 14

Answer the quick quiz questions in E2, at the end of chapter 8.

SOLUTION TO THEORY QUESTION 14

Find the solutions to the quick quiz questions directly after the quick quiz in E2 chapter 8.

SELF-ASSESSMENT QUESTIONS

Now answer the following self-assessment questions:

QUESTION 15

Answer question 8 in the exam question bank of E2.

SOLUTION TO QUESTION 15

Find the solution to question 8 in the exam answer bank of E2.

QUESTION 16

Simon Saves (Pty) Ltd. specialises in accelerating small projects on behalf of clients in order to save them time and money. Simon Saves (Pty) Ltd. asks a consulting fee of 10% of the direct cost savings. Direct cost savings amount to R1 000 per day.

Simon Saves (Pty) Ltd. has been requested to accelerate the following project and has determined the accelerated times and cost slopes:

Activity	Normal time (days)	Accelerated time (days)	Cost slope (R)
A→B	7	3	800
B→C	3	3	-
C→H	19	5	100
A→E	9	5	350
E→C	5	1	2 000
E→G	6	1	300
G→H	12	7	9 000
A→D	8	3	200
D→F	14	6	500
F→G	2	1	5 000

REQUIRED

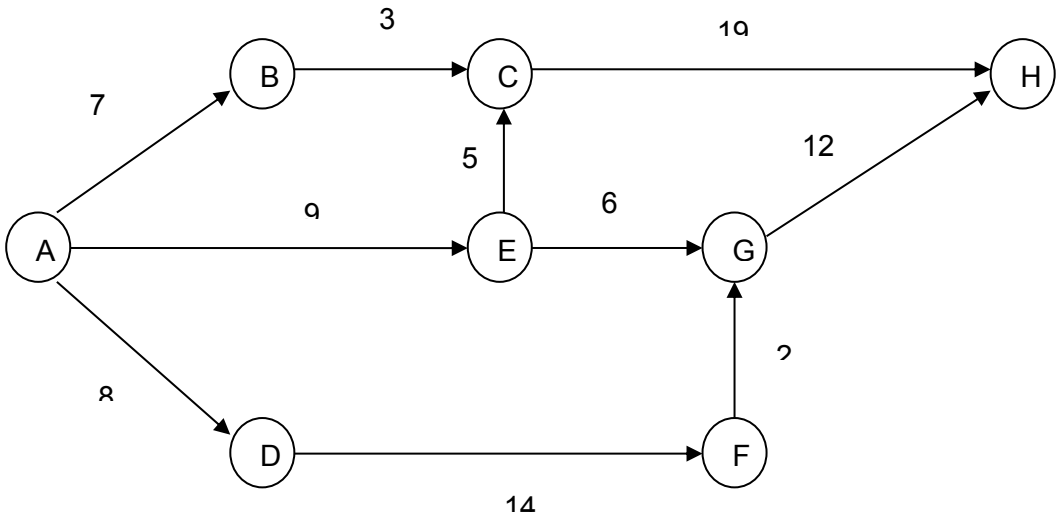
a. Draw a network diagram for the above project.

b. Identify all routes, calculate the duration of each and identify the critical path.

c. Accelerate the project to the most effective plan.

SOLUTION TO QUESTION 16

a.



b. ABCH =7 + 3 + 19 = 29

AECH = 9 + 5 + 19 = 33

AEGH = 9 + 6 + 12 = 27

ADFGH = 8 + 14 + 2 + 12 = 36: critical path

c.

	Routes (days)				Net savings calculation		
	ABCH	**AECH**	**AEGH**	**ADFGH**	**Cost slope (R)**	**Direct cost saving (R)**	**Net saving (R)**
AD by 3 days	29	33	27	36 – 3 =33	(200 + 10% x 1 000) x 3 = 300 x 3 = 900	1 000 x 3 = 3 000	2 100
AD and CH by 2 days each	29 – 2 = 27	33 – 2 = 31	27	33 – 2 = 31	(200 + 100 + 100) x 2 = 400 x 2 = 800	1 000 x 2 = 2 000	1 200

	Routes (days)				Net savings calculation		
	ABCH	**AECH**	**AEGH**	**ADFGH**	**Cost slope (R)**	**Direct cost saving (R)**	**Net saving (R)**
CH and DF by 4 days each	27 – 4 =23	31 – 4 = 27	27	31 – 4 =27	(100 + 500 + 100) x 4 = 700 x 4 = 2 800	1 000 x 4 = 4 000	1 200
AE and DF by 4 days each	23	27 – 4 = 23	27 – 4 23	27 – 4 = 23	(500 + 350 + 100) x 4 = 950 x 4 = 3 800	1 000 x 4 = 4 000	200
CH, EG and FG by 1 day each	23 – 1 = 22	23 – 1 = 22	23 – 1 = 22	23 – 1 = 22	(100 + 300 + 5 000 + 100) x 1 = 5 500 x 1 = 5 500	1 000 x 1 = 1 000	(4 500)

Note:

We will stop after the fourth set of accelerations, as accelerating the project from 23 to 22 days will result in a net cost and is therefore not worthwhile.

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STUDY UNIT 14 DOCUMENTATION, COMPLETION AND CONTROL

1. Introduction

In the previous study units, we discussed what project management is about and how to plan and implement projects. In study units 12 and 13, we have also touched on project completion to some extent – for example, risk management and project management software cannot be isolated to only project planning and/or project implementation. (Remember, in practice there will not be a clear distinction between the end of the one phase and the beginning of the next.)

We are now going to look at project documentation, reporting and controls in more detail, as well as at some activities that mostly take place after the "project work" as such has been completed. You will also learn about project troubleshooting – this is basically the "problem management" that applies to all the phases of the project life cycle.

Again, take note that documentation, for instance, is not limited to the completion phase of the project and that some of the activities, reports, etc that will be discussed here will also apply to earlier phases of the project life cycle. It is not a good idea to leave all reviews until the work has been completed.

We base this study unit on the following chapters in your bespoke BPP reader:

- chapter 8 of E2
- chapter 9 of E2

2. Documenting and reviewing the project

It is very important to document the plans, progress and other aspects of a project appropriately. The project team will also need to determine and report whether they succeeded in achieving the project outcomes, how they can improve, etc.

Now study the major project management reports and documents and how they should be prepared in the following section of E2 chapter 8 of your bespoke BPP reader:

Section	Heading
3	*Documentation and reports*

Also study the following section in E2 chapter 9 of your bespoke BPP reader and attempt the theoretical activities:

Section	Heading
1	*Post-completion audit*

Activity 14.1

List five different areas that the project quality plan needs to cover.

Solution to activity 14.1

1. project risk management
2. project change management
3. resource management (finances [budget], time, etc)
4. project purpose and outcomes (and how the project team intends to achieve and confirm whether they have achieved this)
5. health, safety and environmental management

Reflection

The **project quality plan** in the activity above is just another name for the project management plan or the project plan. Why would some people call it a project **quality** plan?

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Activity 14.2

Explain what **slippage** on a project is and why it should be included in the progress report.

Solution to activity 14.2

Slippage is where the **progress on a project is slower than planned**.

The progress report depicts the **status** of a project at a certain date, which includes **differences** between actual and planned progress on the project in terms of time and money. As slippage will indicate whether or not milestones have been achieved on time, it is an indicator of **timing**

differences between actual and planned progress with regard to time as a resource and should therefore be included in the report.

The progress report is also intended to assist with the **control** of the project. If slippages are identified and reported in the progress report, it could assist the project management team in planning what **action they can take to rectify the situation** of being behind schedule.

3. Troubleshooting

The section you are going to study next will explain how project managers should seek a balance between quality, cost and time and how they can react to changes and problems in the context of a project (when things do not go according to plan).

Now study the following section in E2 chapter 9 of your bespoke BPP reader and attempt the activity:

Section	Heading
2	*Project troubleshooting*

Activity 14.3

Refer back to activity 11.7 in study unit 11. Assume now that manuscripts are reviewed by three persons (the third review is for language editing purposes only) and that the first reviewer still has not returned the reviewed manuscript, despite the assumption that it would take her no more than three weeks to complete the task. The manuscript usually only goes to the next reviewer after being returned by the current reviewer. The manuscript is posted to reviewers, and changes are made manually, after which the manuscript is posted back for typing at the administrative office. The typist is already inundated with other typing work for the project.

Solution to activity 14.3

a. Adding staff that are available and have the necessary skills to assist with getting the work done. Maybe the current first reviewer does not have the skill or capacity to do the review, and the work can be reassigned to someone else or someone can be requested to assist her. The project manager can even consider outsourcing some of the project tasks, like asking an external expert to do the first review of the content of the manuscript.

b. Rescheduling the project by means of adjusting the original plan in the case of unrealistic initial assumptions, etc. Maybe the project manager can recover some time by sending the manuscript to the second and third reviewers even before the first reviewer returns it.

c. Introducing financial or other incentives to team members for good work and for meeting (revised) deadlines.

d. Working smarter by using more suitable approaches and techniques. Are three reviews really necessary, or can the second reviewer also do the language editing? Maybe the reviewers can be requested to make changes electronically to an e-mailed copy of the document, which could save some of the time spent on retyping and in the post. Freeing up some of the typist's time in the process can also enable her to complete her other tasks earlier.

Note:

Relieving pressure on the project typist can also improve her performance with regard to her other project tasks and her enthusiasm, energy levels, etc. However, if the retyping of changes was her only responsibility in the company and this responsibility is taken away from her without being replaced with another, a whole new ethical and legal issue could arise with regard to her employment. We will not go into detail here – just bear in mind that an organisation has certain social and ethical responsibilities (refer to study unit 10, in which developments in non-financial reporting were discussed), as well as legal rights and obligations – also when it comes to its employees.

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4. Quality and improvement

You learnt about controlling the stages of the project in study unit 11 when the PRINCE2 model was discussed. Some of the key knowledge areas distinguished by PMBOK (originally included in study unit 11) also referred to project management processes that involved control, like integrated change, cost control and quality control. You will now learn about another project control system, called **Six Sigma**. This system seeks improvement in processes.

You also learnt about continuous quality improvement in topic 1. You will now also discover how you can follow a continuous improvement approach in project management.

Now study the following section in E2 chapter 8 of your bespoke BPP reader and attempt the activities:

Section	Heading
5	*Compare and contrast project control systems*

Activity 14.4

Read the internet article referred to in section 5.1 of E2 chapter 8 of your bespoke BPP reader by typing the following URL into your browser and pressing enter: http://www.maxwideman.com/papers/comparing/comparing.pdf [accessed 17 October 2013].

Enrichment activity 14.5

Search YouTube for a video on Six Sigma and compare the content of the video to the content of the section you have just studied.

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Now study the following section in E2 chapter 9 of your bespoke BPP and attempt the theoretical activity:

Section	Heading
3	*Projects and continuous improvement*

Activity 14.6

Match each of the following activities with the level number of Kerzner's project management maturity model that suits the activity best. Also provide the name of each level:

	Activity	Level
a.	standardisation of processes	1
b.	evaluation of benchmarking information	2
c.	training of the project manager	3
d.	combining different methodologies into one	4
e.	comparing against standards	5

Solution to activity 14.6

a. 2: common processes
b. 5: continuous improvement
c. 1: common knowledge
d. 3: singular methodology
e. 4: benchmarking

Enrichment activity 14.7

Read the following short article online by typing the URL in the following reference into your browser and pressing enter:

Finweek, 24 April 2013. Three ways to reduce project failure. Available at: http://finweek.com/2013/04/24/three-ways-to-reduce-project-failure [accessed 8 October 2013].

5. Summary

Please see the chapter roundup at the end of every chapter referred to (after the text, but before the quick quiz questions) for a brief summary of the concepts discussed in this study unit.

In this study unit, you learnt to

- identify the most common components of a project management plan
- describe the role of the progress reports, completion report and post-completion audit report
- discuss various project management problems, reasons for project failures and finding a balance between cost, time and quality
- contrast and compare project control systems as well as how continuous quality improvement can apply in a project environment

SELF-ASSESSMENT THEORY REVIEW QUESTIONS

After working through all the relevant sections in the reader, as well as the guidance and activities provided in this study unit, you should now be able to attempt the following self-assessment theory review question and the self-assessment question below this theory question.

THEORY QUESTION 15

Answer the quick quiz questions in E2, at the end of chapter 9.

SOLUTION TO THEORY QUESTION 15

Find the solutions to the quick quiz questions directly after the quick quiz in E2 chapter 9.

SELF-ASSESSMENT QUESTIONS

Now answer the following self-assessment question:

QUESTION 17

Answer question 9 in the exam question bank of E2.

SOLUTION TO QUESTION 17

Find the solution to question 9 in the exam answer bank of E2.

ONLINE ENRICHMENT ACTIVITY

Go to the MAC3703 tab on myUnisa. Under the discussion forum, find the forum called "Online Activity: Topic 6". Open this forum. Find and open the topic that starts with "Student discussion of...". Post a comment of no more than 200 words based on either of the following:

- One or more of the options mentioned in the lecturers' first message under the discussion forum topic heading.
- A fellow student's comment under the topic heading (always be polite when you provide feedback on someone else's work).