APPENDIX B

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IMPORTANT INFORMATION:

This appendix contains the first part of the module content.

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INTRODUCTION AND OVERVIEW

WELCOME

A sincere welcome to you as a registered student of the module MAC2602. It was Chris Corrigan who said:

> *"I'm a firm believer that to really understand a business takes years, not months. As an investment analyst you think you understand a business from the outside, but the reality is that, once you are inside, you can go on learning for five or ten years."*

We trust that studying PRINCIPLES OF STRATEGY, RISK & FINANCIAL MANAGEMENT TECHNIQUES will not only be stimulating, but will provide new knowledge, insight and practical skills for not only the next five or ten years, but a very long time after that.

The management accounting environment is changing and so do the skills and competencies that are required from chartered accountants and management accountants. It is your responsibility as a student to ensure – after the successful completion of this module – that you keep up-to-date with the latest developments in the relevant field.

We leave you with the inspirational words of a truly learned man:

> *"I learned that courage was not the absence of fear, but the triumph over it. The brave man is not he who does not feel afraid, but he who conquers that fear."*
>
> *Nelson Mandela*

Before starting your studies, it is important that you take note of the important aspects, which follow below.

GENERAL OBJECTIVES OF THIS MODULE

This module serves as an introduction to strategy, financial management, financing, managing and investing of funds and risk management.

This module is primarily intended for students who are interested in qualifying as registered chartered accountants (SAICA) or management accountants (CIMA). This module will enable students to develop the necessary competencies prescribed by these professional bodies.

The purpose of the module is to provide students with an overview of organisational strategy and strategic planning. Furthermore, the module will create an understanding of the role of strategic financial management in achieving the organisation's long-term sustainable goals. The module will develop basic skills with regard to time value of money principles, sources and forms of financing, the cost of capital as well as selected techniques to be applied with regard to the managing and investing of long and short-term funds. Lastly, the module will also introduce students to risk frameworks, approaches and risk identification and management.

PRE-REQUISITES

It is assumed that students have the following knowledge and understanding:

- They have reading and comprehension skills to enable them to read questions and case studies, comprehend the content thereof, and follow a logical thought process. Further, students must be capable of applying basic principles they have been exposed to in the tutorial matter to questions or elementary case studies and formulate an opinion or recommendation, or draw a conclusion from this application.
- Students have knowledge of basic accounting concepts, principles and procedures as indicated by successful completion of the prerequisite module stipulated in the admission requirements.
- Students have knowledge of elementary quantitative methods or quantitative modelling or introductory financial mathematics as indicated by successful completion of the prerequisite module stipulated in the admission requirements.

STRUCTURE OF THIS STUDY MATERIAL

The module is structured as four distinct parts, each containing one or more topics. A topic is the main study area within a part, and each topic is divided further into study units. You will find the outcomes, which you are required to achieve for each topic in this material at the beginning of each topic. Self-assessment activities are provided at the end of each study unit so that you can assess whether you have mastered the learning outcomes.

The parts of the module are described below:

PART 1 – STRATEGY AND STRATEGIC PLANNING

(Topic 1)

The purpose of part 1 is to provide an introduction to the development of the organisation's strategy and the factors influencing such a strategy.

PART 2 – INTRODUCTION TO FINANCIAL MANAGEMENT, FINANCING AND THE COST OF CAPITAL

(Topics 2–5)

The purpose of part 2 is to serve as introduction to financial management, financing and the cost of capital.

PART 3 – MANAGING AND INVESTING FUNDS

(Topics 6–8)

The purpose of part 3 is to teach you how an organisation can manage its funds, the analysis of financial information and apply ratio analysis. We also deal with capital budgeting techniques used when investing funds.

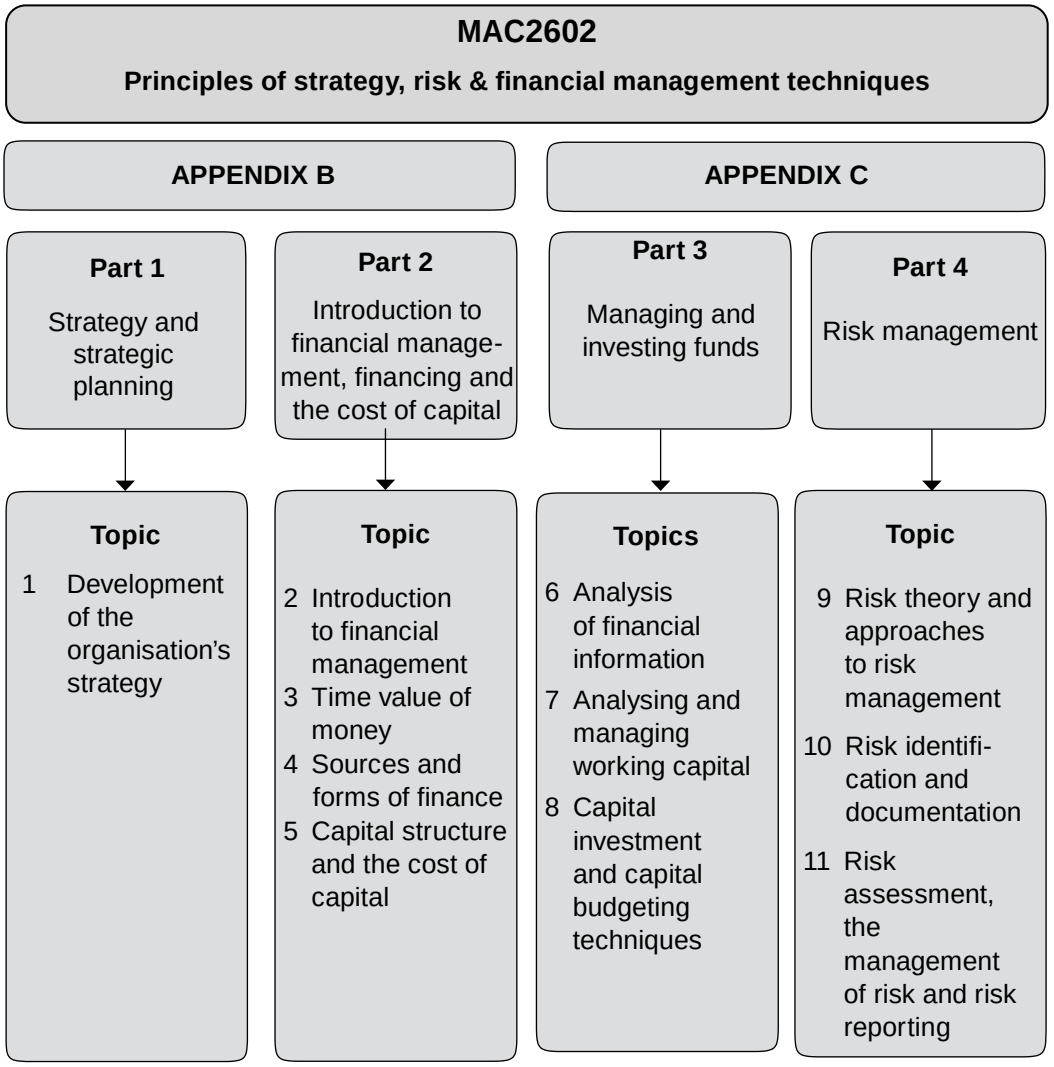
PART 4 – RISK MANAGEMENT

(Topics 9–11)

The purpose of part 4 is to define risk and to explain risk management. This includes risk identification, risk assessment, addressing the risk and risk reporting.

CONTENT – MAC2602 (Diagram 1)

Diagram 1 below contains a schematic presentation of the content of the MAC2602 module.



STUDY MATERIAL AND RESOURCES

Prescribed study material

The prescribed study material for this module is:

- MAC2602 – MO001
- tutorial letters issued during the semester

myunisa resources

Please make use of myUnisa (https://my.unisa.ac.za) as it contains further resources to help you master this module. The following resources are available on myUnisa:

- this MO001 document – MAC2602
- tutorial letters issued during the semester
- previous examination papers

- discussion forum where problem areas are discussed
- announcements
- other resources

Supplementary literature/additional reading

You can use the bibliography at the end of each topic for additional resources if you want to read more on specific topics for self-enrichment.

ASSIGNMENTS

Assignments, with the necessary instructions, are set out in Appendix A of this document. Your assignment questions should be submitted for marking by the due dates.

It is in your own interest to answer and submit as many assignments as possible, since:

- they form an integral, major part of your studies
- you will not be allowed admission to the examination without submitting the compulsory assignment
- they facilitate preparation for the examination
- assignments, as indicated in Appendix A, are taken into account when calculating your year mark; the higher your year mark, the better chance you have of succeeding in this module

CRITICAL SUCCESS FACTORS

Our aim in designing this document was to give you the best possible opportunity to master the knowledge, skills and values required by the discipline and the demands of professional practice.

To ensure that you are successful in your studies, we would advise you to do the following:

- Start as early as possible on your studies. We have found that students who start early
- have time to reflect on their studies and formulate their own informed opinions.
- Use your time sensibly.
- Work systematically through the contents of the study material and other tutorial letters.
- Set realistic goals.
- Believe in yourself.

We designed this module using the South African Qualifications Authority (SAQA) guidelines with regard to the notional hours (time you will need to work through the course material successfully). You will need at least 120 hours to read, practice and study all study material, do your assignments and prepare for the examination. We prepared a guideline time allocation table for you on the next page.

Research has shown that students, who complete their assignments diligently, are more likely to pass their examinations than those who do the minimum.

You will not be able to pass this module successfully if you only try to memorise detail. We suggest that you allow yourself enough time to read through the study material, use

different techniques to summarise the content, spend time reflecting on the issues and principles involved and practice the required calculations.

USING THIS MO001

When commencing your studies, we recommend that you prepare a schedule that allocates time to each study unit, leaving sufficient time for revision closer to the examination (see schedule below).

When studying a new topic, it is recommended that you:

- read the introductory paragraph of the topic in Appendix B and C of this MO001 to accustom you with the aim of the topic
- study the topic in detail using the Appendix B and C as the primary reference to your study material
- prepare summaries of key concepts, definitions and important information from your study material
- evaluate yourself continuously by working through the self-assessment activities provided in the Appendix B and C

STUDY PROGRAMME GUIDELINE

Part	Topic No	Topic	hours
1	1	Development of the organisation's strategy	10
2	2	Introduction to financial management	7
	3	Time value of money	17
	4	Sources and forms of finance	6
	5	Capital structure and the cost of capital	12
3	6	Analysis of financial information	11
	7	Analysing and managing working capital	4
	8	Capital investments and capital budgeting techniques	22
4	9	Risk theory and approaches to risk management	3
	10	Risk identification and documentation	3
	11	Risk assessment, the management of risk and risk reporting	3
Assignments			20
Examination			2
Total hours			120

TEACHING STRATEGY

The focus of our teaching role is to facilitate your learning experiences towards achieving the specific assessment criteria. Furthermore, these learning experiences are designed with the aim of enabling you to master the learning content at a predetermined competence level.

Meaning of words

Throughout this module we communicate learning outcomes and self-assessment criteria phrased in terms of what you should be able to do. This process involves the use of action words, which are typically verbs or phrases containing verbs, describing what the student is expected to do in the learning activity. It is our objective to ensure that the words we use to

indicate a requirement clearly state what you have to do, and you should also ensure that you clearly understand the requirements that are conveyed by the range of words that we will use in the study material for this module.

We list below (in alphabetical order) examples of some of the action words that you will come across in this module, together with their meanings for the purposes of this module.

ACTION	DESCRIPTION
Apply	Make use of in a practical sense; use where relevant or appropriate.
Calculate	Ascertain by mathematical procedure/exact reckoning.
Compare	Examine in order to observe resemblances, relationships and differences.
Complete	Finish/add what is required.
Define	State precisely the meaning/scope/total character; make clear (especially the outline); give a concise description of the distinguishing features.
Describe	Give clearly the distinguishing details or essential characteristics.
Determine	Decide; come to a conclusion/make a decision include reasoning.
Discuss	Examine/consider the opposing arguments.
Draft	Prepare a preliminary version.
Evaluate	Make judgments on basis of given criteria.
Examine	Investigate carefully/in detail.
Explain	Set out the meaning of something; clarify the meaning, provide supporting evidence; argue the truth of something.
Identify	Establish by consideration, select, recognise.
List	Record/item, record/itemise names or things belonging to a class.
Mention/Name/ State	Specify by name; cite names, characteristics, items, elements or facts.
Motivate	Cite facts/reasons as support for a viewpoint or argument and conclude.
Organise	Arrange in an orderly structure/sequence; place into classes/groups according to certain criteria.
Prepare	Make ready/complete; make something ready on the basis of previous study.
ecord	Put in writing; set down for reference and retention.
Summarise	Give a condensed version; state the key aspects.

CONCLUSION

We trust that the preceding sections will assist you in approaching your MAC2602 studies methodically and with a greater understanding.

MAC2602 is not just one of those modules you pass, tick off as part of your degree requirements and continue – these skills are for life! Having these skills will give you a competitive advantage in the market place.

Enjoy your studies and remember the words of Vince Lombardi:

> "The price of success is hard work, dedication to the job at hand, and the determination that whether we win or lose, we have applied the best of ourselves to the task at hand."

We trust that you will enjoy the MAC2602 journey with us. We wish you the best in your studies!

Regards,

Your MAC2602 lecturers

VERY IMPORTANT NOTE

You should not dispose of your study material and other study material such as tutorial letters once you have passed this module. You may need to refer back to it in your next studies, as the principles covered in this module will not be repeated in future modules! In modules following this one, it will be assumed that you have achieved all the learning outcomes specified in the study material.

MODULE PURPOSE

This module is primarily intended for students who are interested in qualifying as registered chartered accountants (SAICA) or management accountants (CIMA). This module will enable students to develop the necessary competencies prescribed by these professional bodies.

The purpose of the module is to provide students with an overview of organisational strategy and strategic planning. Furthermore, the module will create an understanding of the role of strategic financial management in achieving the organisation's long-term sustainable goals. The module will develop basic skills with regard to time value of money principles, sources and forms of financing, the cost of capital as well as selected techniques to be applied with regard to the managing and investing of long and short-term funds. Lastly, the module will also introduce students to risk frameworks, approaches and risk identification and management.

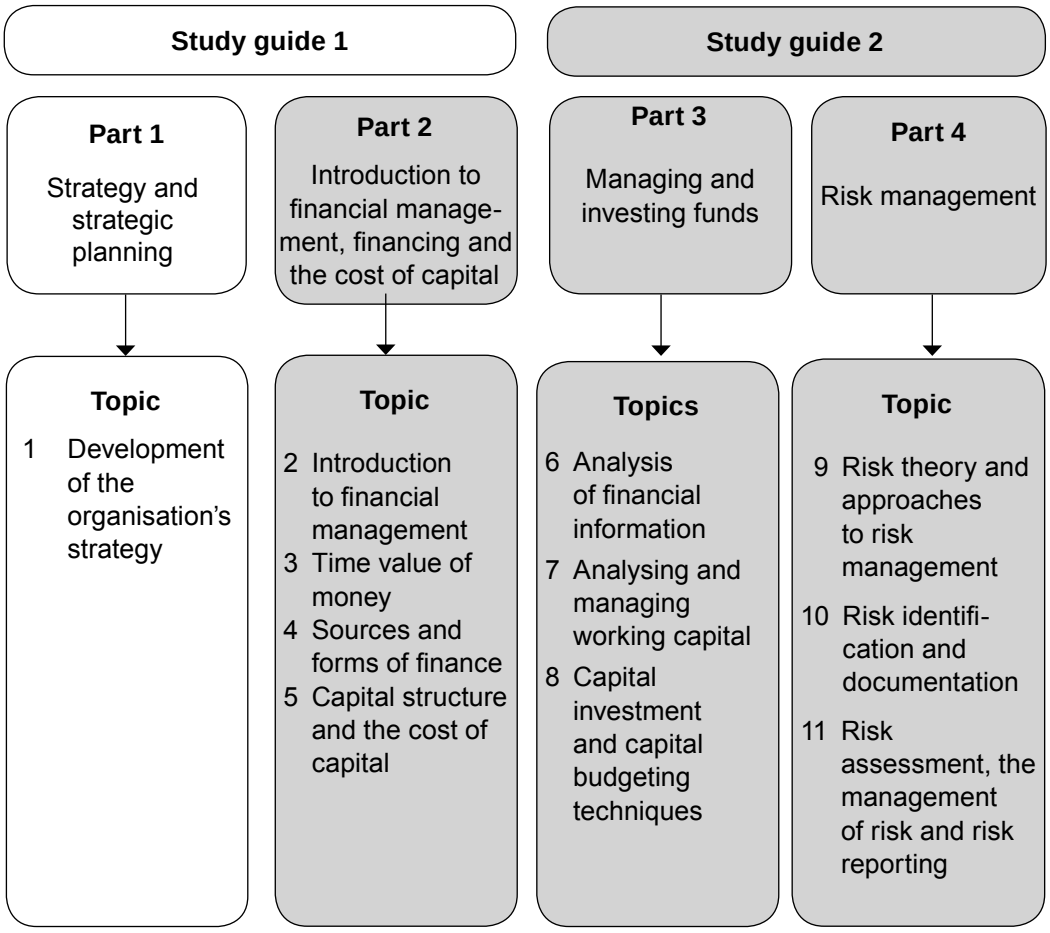
Part 1 Strategy and strategic planning
Part 2 Introduction to financial management, financing and the cost of capital
Part 3 Managing and investing funds
Part 4 Risk management

PART 1

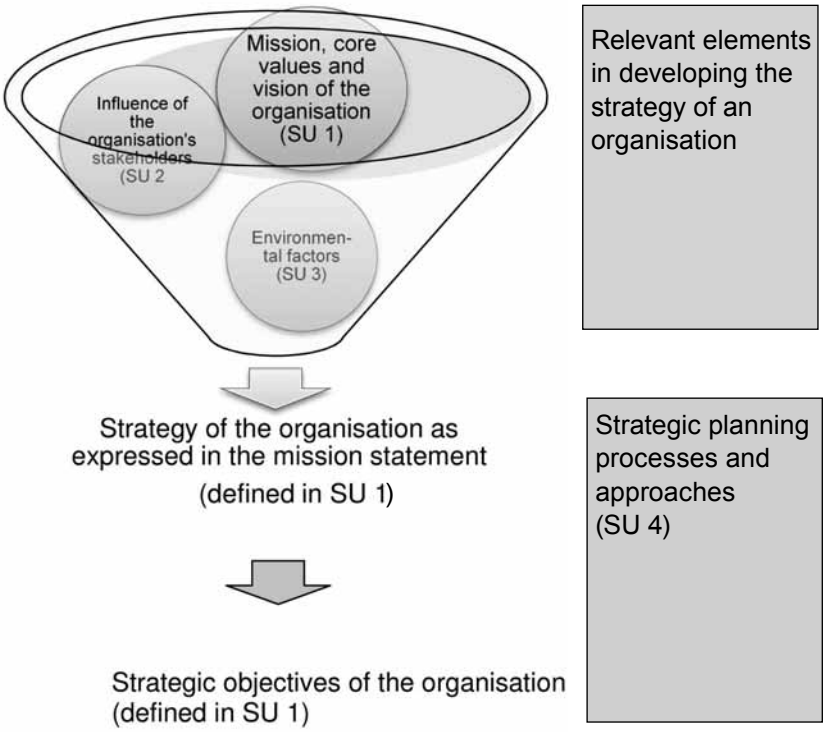
Strategy and strategic planning

PURPOSE

The purpose of part 1 is to provide an introduction to the development of the organisation's strategy and the factors influencing such a strategy.



Many comprehensive books are available on the development of strategy and strategic planning, with various leading scholars in the field having different views and approaches. In this part of the study guide, we do not attempt to discuss all the different viewpoints and approaches. The content of this part of the guide has been written as an **introductory section** to expose you, a future registered chartered accountant (SAICA) or registered management accountant (CIMA), to the development of strategy and selected strategic planning processes and approaches. The next mind map will lay out the topic's components and study units.



Source: Author, 2012

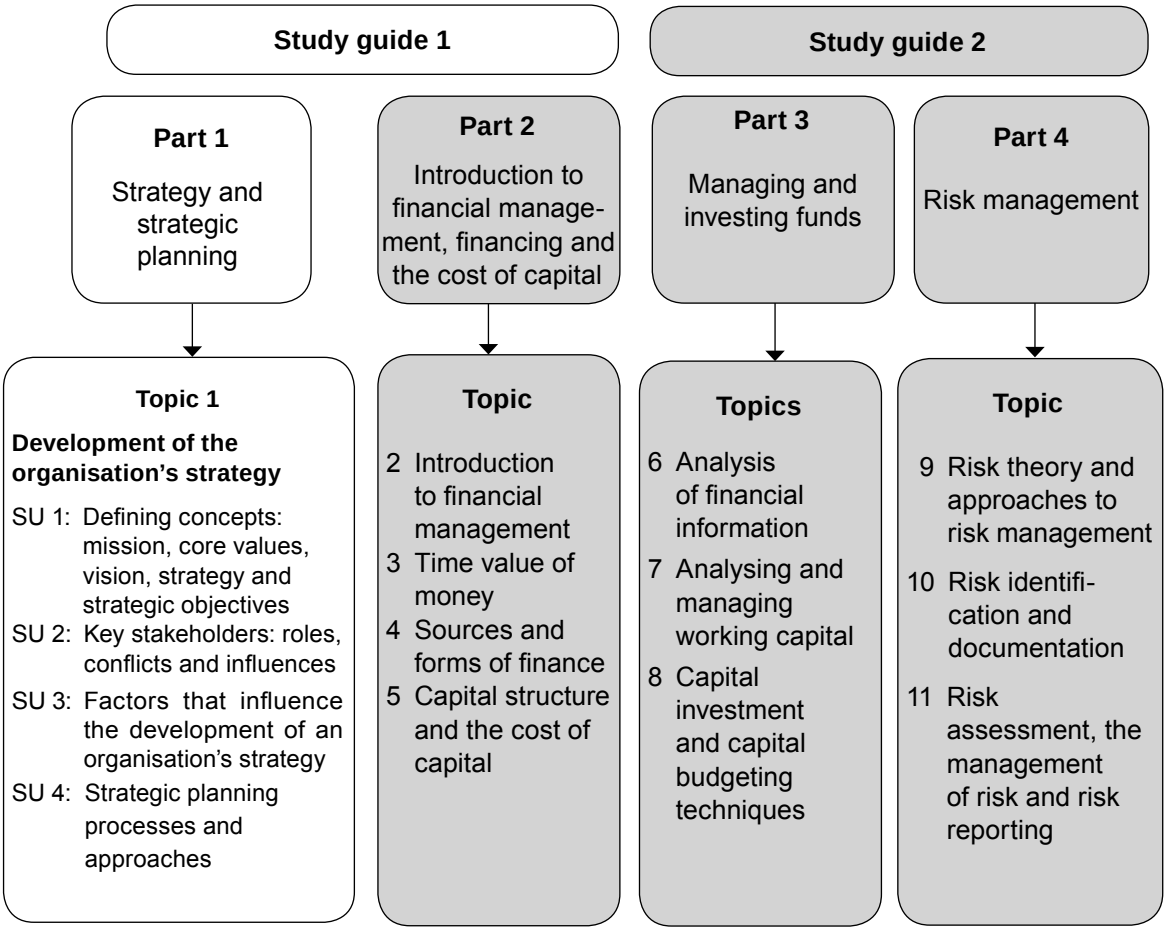
FIGURE 1: Overview of the content of part 1 of this study guide (with references to the relevant study units)

Development of the organisation's strategy

LEARNING OUTCOMES

After studying this topic, you should be able to:

- define and explain concepts relevant to the development of organisation strategy
- distinguish between the roles and influences of different key stakeholders of an organisation
- explain why there is conflict between different stakeholders
- identify and describe the organisation's internal and external environment
- define and describe a typical strategic planning process and critical components of a successful strategic plan
- describe and apply different strategic planning approaches (SWOT, Porter's five forces, etc)



INTRODUCTION

We are sure that, on a personal level, you have thought about or have been asked questions about yourself, such as, who are you really, what are your dreams for the future and how you intend reaching that dream. In finding answers to questions like these, you will no

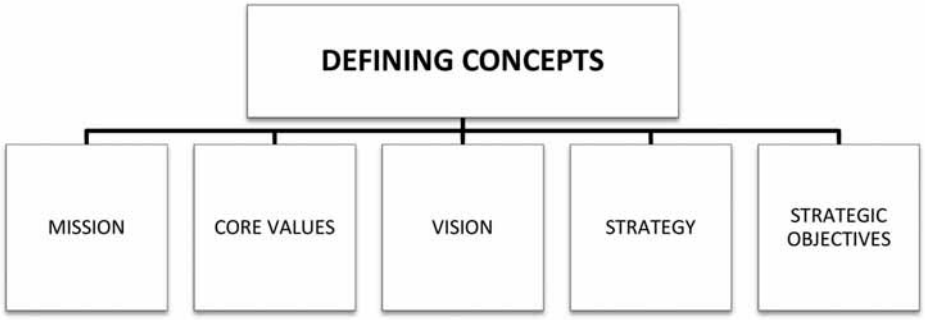
doubt also decide on a plan or course of action, to reach your dreams. Your action plan to reach your dream is your game plan or strategy.

For an organisation to be successful, the same applies, obviously just on a more formal basis. An organisation therefore has to have a plan on the table (strategic plan) on how it intends to reach its dream.

STUDY UNIT 1

Defining concepts: mission, core values, vision, strategy and strategic objectives

In this study unit



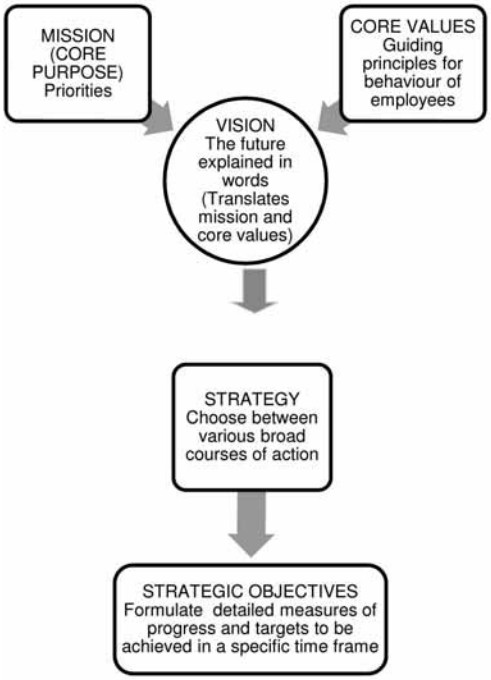
1 Introduction

An organisation has to know what it does/why it exists (mission statement), it needs a dream for the future (vision) and employees have to know what behaviour (core values) is expected from them in dealing with the stakeholders of the organisation to reach its dream. Courses of action (strategies) are chosen to realise the vision. All these elements need to be taken into account – and aligned to one another – to make the dream of success come true.

In this study unit, a short discussion of each of the elements and how it is aligned with each other is provided.

2 Concepts

Figure 1.1 below is a graphical layout of how the different concepts fit together in developing the organisation's strategies and strategic objectives.



Source: Author, 2012

FIGURE 1.1: Visual layout of the connection between concepts

We will now discuss each of these concepts individually.

2.1 Mission

MISSION STATEMENT

A mission statement defines the core purpose of the organisation, by broadly stating the reason(s) why the organisation exists.

A mission statement may be a short sentence or a whole page. The mission statement is a wide statement that does not contain figures (targets) or a time limit for achievement. It is rarely changed as not to lose its force and become just a slogan. The mission statement is devised by the organisation's top management (board) in consultation with management consultants as a tool that guides the priorities that direct an organisation's behaviour, as personified by the actions of its directors and employees.

An effective mission statement should have certain characteristics, namely:

- It should inspire change within the organisation although the mission statement itself does not change.
- It should be long-term in nature, as it will not change.
- It should be easy to understand and easily communicated.

The benefits of a mission statement can be summarised as follows:

- It describes what the organisation is about.
- It reveals the area in which the organisation is operating.

- It provides a guiding philosophy about the direction an organisation should take.
- It enables communication of a common culture through the whole organisation.

Examples of mission statements can be found on the websites of almost all the large organisations (companies) in South Africa. We searched the internet to obtain examples of mission statements. We chose one of the leading clothing, footwear and textiles retailing groups in Southern Africa, namely the Edcon group which include stores such as Edgars, Jet, Boardmans and Prato (http://www.edcon.co.za).

Let us also look at the mission statement of a large manufacturing company in order to compare the mission statements of a retail company with that of a manufacturing company.

We accessed the internet and found the mission statement of South African Breweries (SAB) on their website http://www.sablimited.co.za/sablimited/content/en/sab-vision-and-values.

You can see from the mentioned examples that a mission statement can be a short sentence or a whole page. You should also note that the mission statement is a wide statement that does not contain figures (targets) or a time limit for achievement.

2.2 Core values

CORE VALUES

Core values are the principles that guide an organisation by describing how every employee is expected to behave.

The core values of an organisation should therefore be visible in the day-to-day behaviour of all the employees. Because core values reflect what the organisation stands for, independent of the current environment, they do not change over time, but remain the same.

It is important that leaders strive to set an example and that their words and actions mirror the values that they set for the organisation. The Chief Executive Officer (CEO) sets an example for employees' behaviour. By constantly communicating these values through actions, core values become part of the culture in the organisation. The core values are also reflected in the manner in which corporate governance is exercised in the organisation.

The group values extracted from the Edcon and SAB websites serves as an example. Their values are as follows:

2.3 Vision

VISION STATEMENT

The vision statement defines where the organisation wants to go in the future.

The vision statement gives a clear picture in words of what the organisation wants to become ultimately in the future. It represents an ideal picture/state of the future.

A vision statement should not reflect an extension of the CEO's ego, but present a clear view of the future's opportunities and challenges. The word "industry foresight" better explains a realistic vision statement that is based on insights into trends in regulation, demographics, lifestyles and technology.

Activity 1.1

Use the internet to search the website of at least one service and one manufacturing organisation (company) of your choice. Select their mission, values and vision and compare it with the characteristics and example presented in the discussion regarding those concepts.

REQUIRED

In your opinion:

a. Does their mission define the core purpose of the organisation?
b. Do their core values supply the principles of how every employee should behave?
c. Does their vision define where the organisation wants to go in the future?

Feedback on activity 1.1

Do you notice how the different industries/markets have an impact on the mission, values and vision? You will learn more about this in later study units.

2.4 Strategy

The term "strategy" has different meanings for different people, making one definition almost impossible. We have therefore provided a simple definition of strategy, followed by a discussion of the elements of strategy.

STRATEGY

Strategy is about choosing long-term activities to achieve the purpose set out in the mission statement and ultimately moving towards realising the vision.

Elements of strategy can be identified as follows:

- The choice of activities is important since it should be sufficiently different from that of competitors that could lead to a distinctive place in the market and provide a competitive advantage. Successful strategies can be developed when activities are chosen which focus on the key strengths of the organisation. This distinguishes the organisation from others in the same industry.
- Trade-offs are made when choosing specific actions as opposed to other actions. It necessitates that a decision also has to be made about which activities not to choose.
- The activities that are chosen should fit one another in order to lead to success.
- There can be a change in strategies due to major structural changes in the local or global industry and advancements in technology. These changes can bring about new opportunities that can be incorporated by modifying the existing strategy. Strategy should however not be constantly reinvented.
- The formulation of strategy involves both conceptual and analytical thought processes and should display a broad conceptual knowledge of the operating environment of the organisation.
- The strategies take the organisation's core values into account.

NOTE

In study unit 4 we will delve into more detail regarding the process of setting the organisation's strategy!

TABLE 1.1: Three generally accepted competitive strategies that are available to organisations in order to achieve their long-term goals:

Cost leadership strategy

Aims to supply standard, no frills, high volume products or services at better prices than competitors.

Stresses that facilities are efficient for their purpose and engage in cost reductions in the manufacturing process. Minimises expenses (eg research and development, selling and advertising). An example is Shoprite.

Differentiation strategy

Aims to create products or services perceived as uniquely attractive, creative and well-designed.

Aim to gain a reputation for the excellent quality of their products/services, good corporate image, and first-rate marketing channels. Emphasises strong market abilities. An example is Woolworths.

Pricing strategies

Price skimming:
By setting high selling prices for unique products, thereby maximising short-term profits.

Selective pricing:
By setting different selling prices for the same product or service in different markets.

Market pricing:
By setting the selling price for a product or service on the perceived value to the customer.

Predatory (penetration) pricing:
By setting a low selling price for a product or service in order to gain market share.

The cost leadership strategy focuses on the cost of products (to produce products at the lowest cost). The differentiation strategy focuses on producing unique quality products, and pricing strategies focus on the price of products or services.

The four different pricing strategies depend on the type of product or service as well as the specific market for the product or service. These pricing strategies make use of opportunities in the market to affect the profitability of the organisation and differentiate the product and the organisation in the market.

NOTE

You will learn more about the costing and pricing of products in MAC2601 and MAC3701

2.5 Strategic objectives

As illustrated in figure 1.1, the setting of strategic objectives follows from the mission statement. The mission statement only states the core purpose of why the organisation exists and guides the priorities of the organisation's behaviour, which is vague and has no time limits for achievement. Therefore, strategies are only broadly identified in the mission statement.

STRATEGIC OBJECTIVES

Strategic objectives clearly formulate measures of progress and targets to be achieved in a specific time frame.

A strategic objective has the following characteristics:

- It is a precise formulation of the goals to be achieved.
- It contains a measure for progress towards the attainment of the attribute.
- It contains a target to be achieved.
- It contains a time-frame in which the target is to be achieved.

Strategic objectives should meet the following criteria, referred to by the acronym SMART:

- **S**pecific in what is to be achieved
- **M**easurable, specified as a quantity
- **A**ttainable
- **R**elevant to the mission
- **T**ime-bound with a completion date

Activity 1.2

Assume that you are the financial manager of a large public company that operates a chain of supermarkets in South Africa. The mission of the company is to be one of the largest in the industry in order to meet the needs of all their stakeholders. Identify specific strategic objectives that you will set out to achieve. Make sure that these objectives display the four distinctive characteristics, stipulate the resources to be used as well as the policies to govern the acquisition and use of resources.

Feedback on activity 1.2

Set objectives such as:

The company will become:

- one of the five largest supermarket chains in South Africa (specific attribute) by:
  - gaining at least 50% (target)
  - of the market share (measure)
  - within the next five years (time-frame)

- This will require an increase in the current market share of 30%, to 50% and will be achieved by:
  - taking over 20 existing supermarkets of competitors in rural areas (resources), aggressive marketing and
  - cutting costs by bulk buying from suppliers (policy).

3 Summary

In this study unit, we defined various important concepts. The mission statement sets out the core purpose of the organisation. The mission statement therefore inspires corporate strategy and strategic objectives by indicating the organisation's priorities. The core values represent the way in which things are done as demonstrated through the behaviour of all employees of the organisation. Core values should be linked to the organisation's purpose and reinforce the corporate strategy. The vision statement serves to translate the mission and values to strategy and strategic objectives.

These concepts form the basis for the development of the strategy and setting of strategic objectives of an organisation, as indicated in figure 1.1.

In the next study unit we will focus on the stakeholders that may influence the organisation's strategies.

Self-assessment activity

After having worked through the study unit, you should be able to answer the following questions:

a. What is described in an organisation's mission?
b. What are the benefits of a mission statement?
c. Does a change of the environment generally require a change in core values?
d. How can core values become part of an organisation's culture?
e. What is described in an organisation's vision statement?
f. What is the link between vision statement and strategy?
g. Define strategy.
h. List three competitive strategies that can be used to compete in the market.
i. Distinguish between cost leadership and differentiation strategy.
j. Identify and describe four pricing strategies.
k. List the characteristics of strategic objectives.
l. List the criteria that strategic objectives should meet.

STUDY UNIT 2

Key stakeholders: roles, conflicts and influences

In this study unit

1 Introduction

In the previous study unit, you were introduced to various important concepts like a mission statement, core values and vision statement, which are the basic building blocks for developing the strategy of an organisation.

In this study unit, we will introduce you to the key stakeholders and conflicts that may arise between different stakeholders. We will also explain how key stakeholders can have an influence on the development of an organisation's strategy. You will notice that this is the second circle, slightly to the left in figure 1, which is found at the introduction to this part)

2 Definition of stakeholders

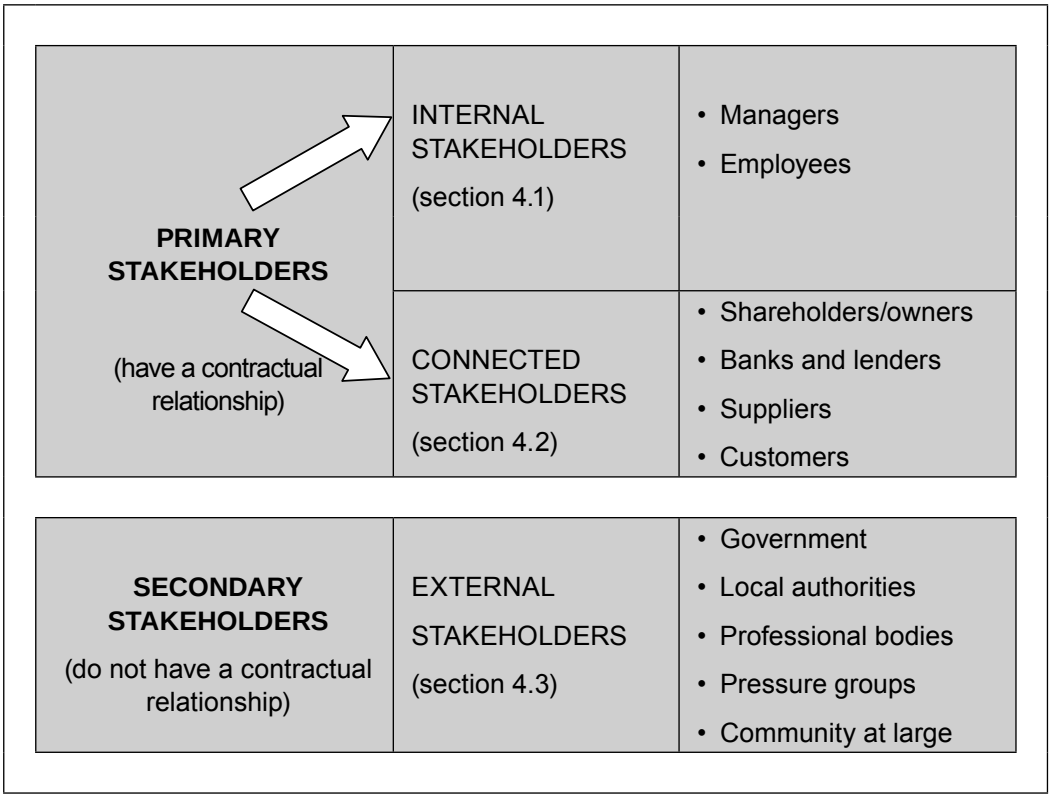
STAKEHOLDERS

Stakeholders are those persons and organisations that are affected by the activities of the organisation and therefore have an interest in the strategy of an organisation. Stakeholders include staff, shareholders, creditors, suppliers, customers, government, local authorities, professional bodies, pressure groups and the community at large.

3 Classification of stakeholders

A classification of stakeholders can be made based on whether the group has a contractual relationship with the organisation or not. Stakeholders can therefore be classified either as primary stakeholders (that have a contractual relationship) or as secondary stakeholders (that do not have a contractual relationship).

Primary stakeholders can further be divided between internal and connected stakeholders while secondary stakeholders are all external stakeholders. A visual layout of the classification of stakeholders is given in figure 2.1 below:



Source: Author, 2012

FIGURE 2.1: Classification of stakeholders

4 Roles of the stakeholders

4.1 Internal stakeholders

Internal stakeholders will have a strong influence on how the organisation is managed because, as the managers and employees, they are intimately involved with the organisation. Their interests will mainly be issues concerned with the growth and continued existence of the organisation because that will have an effect on their jobs/careers. The effect on their jobs/careers could be promotion, money/salaries, benefits and job satisfaction. In certain remote locations, like mines, employers are also responsible for providing housing and other services to employees. This may affect their quality of life.

If the expectations of managers or employees are not met, their response could be resignation, industrial action, or ignoring the goals of shareholders. This means that they will follow their own goals at the expense of organisation goals. An example is a strike by employees (that are dissatisfied with the remuneration offered by the organisation) in order to negotiate better wages.

4.2 Connected stakeholders

Shareholders, banks and lenders, suppliers and customers are connected stakeholders. Each of these groups is connected to the organisation through the relationship they have with the organisation. The individual groups will be interested in the objectives of the organisation in as far as the organisation objectives affect their own respective goals.

Shareholders/owners are the people who have invested their money in an organisation to increase their wealth and earn income from the investment. The interest of shareholders will revolve around the risk attached to their investment in the organisation and the increase in their wealth. The returns required by shareholders could spur the organisation to implement cost cutting exercises (like retrenchments) or shareholders could provide more funds (if they receive satisfactory returns) to invest in expansion projects which could result in more jobs.

If their expectations are not met, shareholders can respond by selling their shares and investing elsewhere. Shareholders who own more than 50% of the shares in an organisation (majority shareholders) may even decide to sell their shares to rival organisations, enabling the rival organisations to take over the organisation. Majority shareholders can even remove and replace the current management. You will learn more about the rights of shareholders in your auditing modules.

Banks and lenders are interested in the cash flows of the organisations to which they extended loans. They are concerned with the security of loans and the compliance to the loan agreements. If they are not satisfied, they can deny credit or charge higher interest rates.

Suppliers are interested in the purchase strategy of the organisation. Suppliers want to ensure that they earn profit from the sales to the organisation and that they are paid for the goods they have supplied. If the organisation fulfils these expectations, suppliers will want to ensure a long-term relationship with the organisation. If the organisation does not, they can end their relationship by not supplying goods to the organisation. If the organisation is not paying for goods as agreed, suppliers may refuse to supply goods until payment is received or they may even file court action for non-payment.

Customers have an interest in the organisation's product market strategy. Customers want the goods to be supplied to them as promised by the organisation. This usually involves the agreed type, quality, quantity and time of supply. Customers often expect to receive future benefits if they are loyal to the organisation. If customers are not satisfied with the goods, they may buy the products elsewhere or they may sue the organisation to recover losses made because of incorrect or substandard goods supplied to them by the organisation.

4.3 External stakeholders

The government, local authorities, professional bodies, pressure groups and the community at large are external stakeholders. Each one of the external stakeholders has different expectations, only two of which are discussed in more detail below:

The government is interested in the number of people that the organisation employs, the training that is provided to the employees and the tax that it will derive from the earnings of the employees and the organisation. The government can influence the organisation by increasing taxes, regulating certain aspects of the organisation and even taking legal action if the organisation does not comply with their regulations.

Pressure groups and interest groups are groups such as workers unions, those for human rights and consumer rights, groups against pollution, the local community, and so forth. These groups act on behalf of people/the environment whose rights are adversely affected by the organisation. The pressure groups can take direct action against the organisation if they feel that the rights which they are protecting are violated. This can result in bad publicity that can harm the public image of an organisation and threaten its existence. An example is the Consumer Protector that acts on behalf of consumers in cases where their rights are denied. The Consumer Protector forces the organisation to adhere to the consumer's rights.

5 Possible conflicts between the expectations of the different types of stakeholders

In the discussion above, we illustrated how the interests of stakeholders in the activities of an organisation are dependent on the type of stakeholder.

Shareholders/owners expect a specific return on their investment while employees expect security of their jobs and job satisfaction. An example where conflict between the expectations of different stakeholders can arise, is when an organisation chooses to use a capital-intensive production process to enhance its competitiveness in the industry and increase its profits for shareholders/owners (shareholders'/owners' interests are prioritised by the organisation). People employed to work in the old labour intensive process will have to be retrained or retrenched (laid off). They will be against the new production process.

The conflict between the expectations of the shareholders/owners and that of the employees can make the implementation of the organisation's strategy – to enhance its competitiveness – difficult. Another example is when concerns about the health and safety of employees and people in the surrounding communities, may lead organisations to spend money on containing smoke and recycling used water. This expenditure will reduce the returns of the shareholders while the expectations regarding safety and health of the employees, pressure groups, local authorities and communities at large, are met.

From the discussion above, you can see that the expectations of the different stakeholder groups may be in conflict with each other and influence the strategic choices of an organisation. The situation becomes even more complicated when some individuals are part of more than one stakeholder group. An example of this kind of complicated conflict is when employees are also shareholders or employees are also customers and/or members of pressure groups such as workers' unions.

6 The influence of different stakeholders on development of organisation strategy

The threat of conflict between the expectations of different stakeholder groups will always have to be taken into account, because it can have a definite influence on the development of the organisation's strategy.

At any given time, an organisation may be influenced more than usual by a specific type of stakeholder due to specific circumstances. This specific type of stakeholder will then be referred to as a key stakeholder.

The influence of key stakeholders can be due to the organisation's dependency on its relationship with that specific type of stakeholder. The dependency can, for instance, be because of cash flow problems when the organisation will depend on its bankers. Although the dependency on specific stakeholders may differ at specific points in time, the organisation always depends on its customers.

Different stakeholder groups also have different degrees of power over the organisation. Great care should be taken of the relationship with those stakeholder groups with the most power and it should be managed well. An example of such a relationship is that which the organisation has with a major customer.

The level of interest that a stakeholder group has in the organisation will also determine its ability to influence the strategy of the organisation. Large institutional shareholders are an example of a stakeholder group with a high level of interest in the organisation.

The significance of the relationship with different stakeholder groups (whether it is because of dependency, their power, or level of interest) should be taken into careful consideration when future strategies are considered.

Because of their connection with and expectations of the organisation, stakeholders have varying degrees of influence over the strategic choices that an organisation makes. These influences include shaping strategic decisions, limiting choices by exerting physical or ethical constraints, and influencing the priority of options under discussion.

Over and above the influence on the choice of strategy, stakeholders can also have an influence on the successful implementation of strategy.

Activity 2.1

Can you identify which specific external stakeholder group can influence the strategy of an organisation by any of the following actions?

a. a ban on smoking in public areas
b. an increase in the tax on liquor
c. an increase in health and safety regulations
d. black economic empowerment (BEE) legislation
e. economic policy that increase or decrease interest rates on borrowed money

Feedback on activity 2.1

All of the above actions are examples of how **government** can have an influence on the strategy of organisations.

Activity 2.2

Identify four **connected** stakeholder groups and supply your own example of the role of each group in influencing the strategy of an organisation.

Feedback on activity 2.2

Refer to section 4.2 and supply your own example for each group.

Activity 2.3

Consider the following scenarios:

a. Customers demand that no products should be tested on animals.
b. The National Union of Mineworkers (NUM) demands that mineworkers' working conditions and their safety must be improved.
c. Banks and retirement funds hold 56,32% shares of Shoprite Holdings Ltd.

Identify the **key stakeholders** in each scenario and explain **how** the **significance** of the relationship between the organisation and the identified key stakeholder can influence the organisation's strategy development.

Feedback on activity 2.3

Scenario a. The customers – the significance of relationship is the organisation's dependency on its customers. The organisation should put a high priority on satisfying the demands of their customers when developing their strategy. The organisation can, for instance, put in their mission statement that they will only supply products that were not tested on animals.

Scenario b. Pressure group – the significance of relationship is the degree of power of the workers' union on the organisation's strategy development. The organisation should implement improvement of the working conditions and safety of their workers as part of their strategy development. The mission statement should contain a specific commitment to create good and safe working conditions for their employees.

Scenario c. Major shareholders – the significance of relationship is the level of interest of major shareholders. The organisation should develop its strategy in such a way that their major shareholders will realise the expected return on their investment in the organisation. In order to ensure this, the organisation should follow a strategy that will enhance the wealth of their shareholders.

7 Summary

In this study unit, we identified different stakeholder groups and explained their different roles. We discussed possible conflict between the groups and the influence that each group can have on the development of the strategy of an organisation.

In the next study unit, we will focus on factors in the business environment that may have an influence on the development of an organisation's strategy.

Self-assessment activity

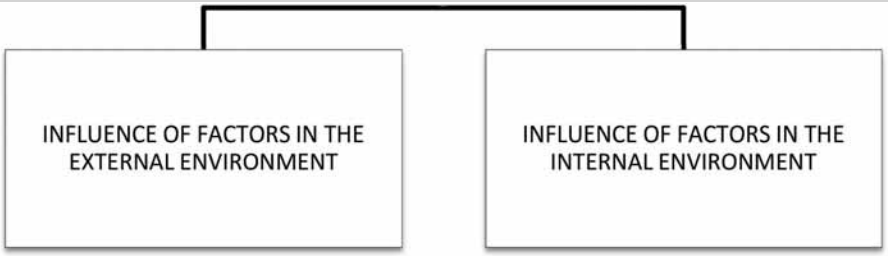
After having worked through the study unit, you should be able to answer the following questions:

a. Define which persons/groups would be included in the term “stakeholders”.
b. Based on the contractual relationship between an organisation and its stakeholders, name the two broad types in which stakeholders can be classified.
c. Identify four groups of connected stakeholders that are interested in an organisation as far as the organisation objectives affect their own respective goals.
d. Name two groups of external stakeholders over which the organisation has no control.
e. What is the main reason for possible conflict between stakeholders?

STUDY UNIT 3

Factors that influence the development of an organisation's strategy

In this study unit

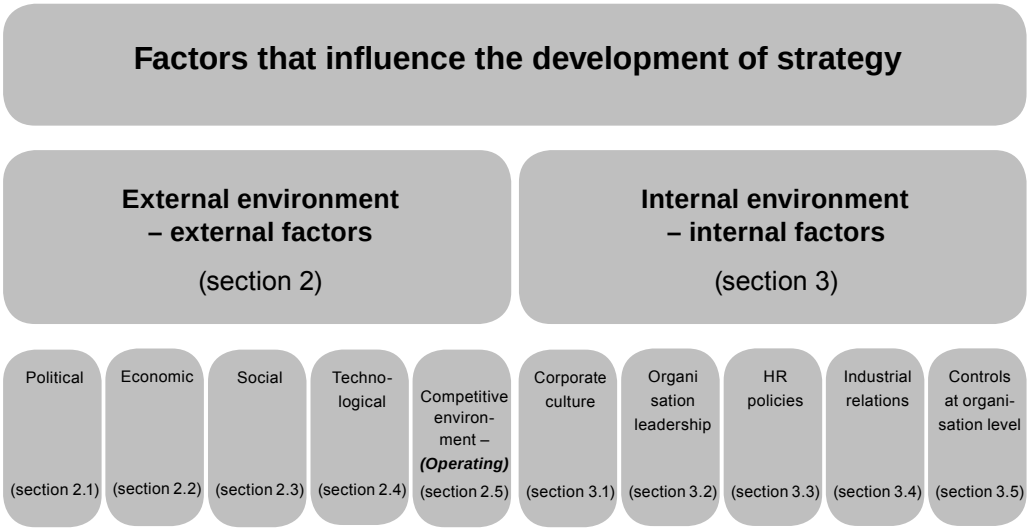


1 Introduction

In the previous study unit, we identified stakeholder groups and discussed their influence on the development of the organisation's strategy.

In this study unit, we will identify and discuss factors that influence the development of an organisation's strategy (represented by the lower circle to the right in the big picture of the development of strategy, in figure 1 (at the introduction to this part).

The figure below provides an overview of the factors that influence the development of strategy in the organisation. You will notice that the "environment" can be divided into the external and internal environment, each of which has various factors that could have an influence on strategy development.



Source: Author, 2012

FIGURE 3.1: An overview of factors in the business environment influencing strategy development

2 Influence of factors in the external environment

Organisations operate in a business environment that is continually changing. The business environment includes all the factors which fall outside the control of management but which can influence the success of the strategies of the organisation.

The five main external environmental factors (forces) that we are going to refer to are political, economic, social, technological and competitive, as indicated in figure 3.1 above. These factors represent most of the challenges that organisations may encounter when trying to attract or acquire resources and when marketing their products and services.

Based on the discussion above, you will agree that the changes that occur within the external environment should be taken into account when the strategy of the organisation is planned. It is also important to take into account the fact that these forces in the external environment are constantly changing (are dynamic) and they are also interactive.

2.1 Political (including legal) environment

Political environmental factors can have either positive or negative effects on the profitability of an organisation. Factors that can have a negative effect are those factors that limit profits; such as restrictions placed on organisations through laws and legislation (legal factors). Examples are fair-trade laws, export restrictions, tax laws, and minimum wage legislation. At any given time, the political climate influences the types of legislation, which in turn influences corporate spending. Examples of this would be taxes on certain luxury goods or taxes on capital gains.

Apart from the laws enacted by the government, the general political climate also influences business and consumer confidence and spending patterns. Examples of important factors are timing of local or general elections, the potential of unrest and whether a specific party or leader is deemed “business friendly”. In countries that experience an unstable political environment and a lack of information, governmental influences are of utmost interest to the operations of organisations.

2.2 Economic environment

The economy has a significant influence on the feasibility of an organisation’s strategy. Economic factors such as inflation, interest rates, tax rates and tax laws, disposable income, unemployment, trends in gross national product and business cycles, need to be assessed as it can have an influence on the organisation. For example, if numerous organisations sustain losses over a few business cycles, their management may have to lay off some of their workers as a means to lower expenses. The reduction in the workforce of an organisation will result in increased unemployment, which in turn, will negatively affect the disposable income as well as the tax base of the local economy.

2.3 Social environment (sustainability and ethics)

The social responsibility of an organisation can be explained as the obligation of management to take actions that protect and improve both the welfare of society as a whole as well as the interests of the organisation and its owners. In recent years, there have been quite a few ethical issues relating to corporate behaviour that have influenced social views globally.

The number of financial scandals in America around 2002, such as Enron, has negatively affected the public’s opinion of corporate strategy regarding decisions that have an effect on shareholder and employee interests. The financial crisis in 2008, caused by slack banking practices, has also damaged societies’ view of the financial services sector. Stakeholders

and more specifically shareholders, now demand transparency about the strategy and actions taken by the directors of organisations to enable them to make informed decisions about investment choices.

Another example of the influence of the social environment is the exposure of unethical and unlawful actions of organisations such as collusion to fix prices. An example is the exposure of the Tiger Brands Group with regard to the fixing of bread prices in South Africa. The phone-hacking scandal in the UK by a newspaper had enraged the public and resulted in New Corp Limited paying damages to people whose cell phones were hacked.

As society became more health conscious and aware of the health risks caused by irresponsible production processes, they demand that organisations comply with their social responsibility towards people's health by taking the necessary precautions with regard to the level of pollution caused.

Companies are held accountable by societies for environmental damages such as that caused by the BP Deepwater Horizon oil spill in 2010. BP had to pay for the cleanup as well as compensate coastal societies for loss of business due to the polluted sea. Mining companies have to pay for the rehabilitation of the mine dumps after the mines close. Societies also demand that organisations plough back some of their profits into schools for local communities, bursaries for further training, and so forth.

2.4 Technological environment

Technological factors are the scientific improvements that affect the competitive position of the organisation. Keeping up with the development of new technologies decreases the probability of products becoming out of date and it also encourages innovation. Advancements in technology can have an impact on or influence the organisation's strategy in a number of ways. For example, new technologies can change the demand for a product, enable the production of new products, cause existing manufacturing processes to become outdated, or reduce costs to a lower level than those of competitors.

Activity 3.1

The following are examples of how factors in the external environment can have a negative effect on the profits of organisations and therefore should be considered in the development of strategy. Link each example to the specific external environment from which it originates.

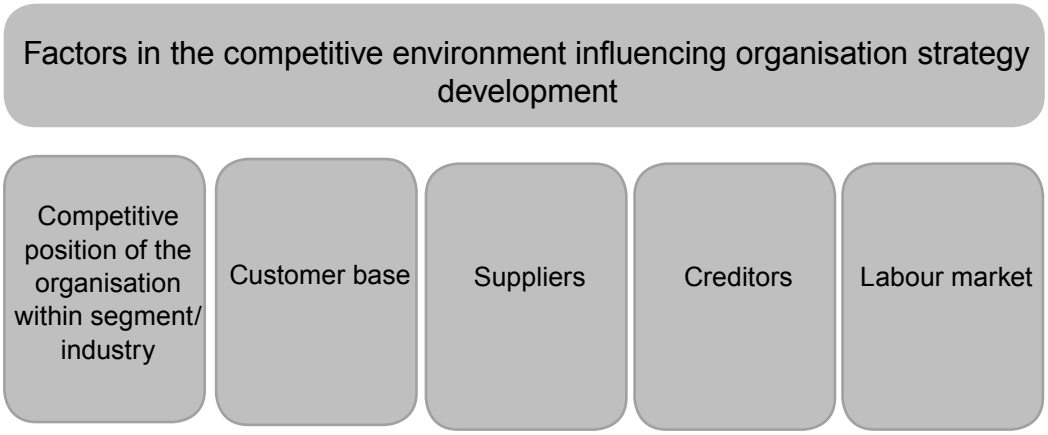
a. an increase in the inflation rate
b. exposure of unethical behaviour of organisations
c. an increase in minimum wages
d. advances in the use of alternative energy resources
e. demands from consumers regarding the use of bio-degradable (environmentally friendly) packaging materials

Feedback on activity 3.1

a. economic environment
b. social environment
c. political environment
d. technological environment
e. social environment

2.5 Competitive environment (operating)

You will remember that we identified the competitive environment as the last external environmental factor influencing strategy development (figure 3.1). In the following figure, we have extended the competitive environment to illustrate the factors that are part thereof.



Source: Author, 2012

FIGURE 3.2: Factors in external competitive environment influencing strategy development

2.5.1 Competitive position

Every business has competitors that provide similar products or services within their segment/industry or professional discipline. They play a role in the overall industry by delivering goods and services of high quality at competitive prices. Having competition is good because it gives consumers choices and presents an opportunity to establish a niche (specialised) market. The number of competitors, the strength of the competition, as well as barriers to entry, all have an impact on strategy development.

In order to understand the competitive position of the organisation, an analysis of its competitors can be done to understand their weaknesses and then to exploit it. An example of such an exploitable weakness is a video shop that charges a fee for the late return of videos. Customers can be influenced to change to another video shop that does not charge fees for late returns. Another strategy to gain the market share of a competitor is to buy the business unit belonging to the competitor. For example, an organisation can buy the majority of shares of a rival organisation as a way to increase their market share.

The purpose of doing a competitor analysis is to:

- Study the market, trends and patterns.
- Predict and forecast an organisation's demand and supply.
- Formulate a strategy.
- Increase the market share.
- Develop a strategy for organisation growth.
- Plan for diversification and expansion.
- Study forthcoming trends in the industry.

2.5.2 Customer base

Customers or clients are an essential part of any organisation. An organisation must be able to manage their marketing and production to make sure that their customers' demands

are met. Organisations that change to adopt to their customers' demands will benefit from growing customer loyalty and improved sales.

2.5.3 Suppliers

A supplier's role is similar to that of a creditor in that the organisation is depending on a third party. An organisation can buy parts, services or other tangible goods from their suppliers. These are then used to create or improve their product or service. The security of supply is very important to the organisation as they will lose money if the needed material, parts or services are not delivered in time, are not of the right quality, and are not at favourable prices.

The strength of the bargaining power of suppliers has an effect on their ability to raise their prices to the organisation. Suppliers that only have a few competitors are likely to be more powerful, if each individual purchase forms only a small amount of their organisation's sales or if there are no good alternatives for their product or service. If a supplier does not plan well or has problems with their production, it could ruin the sales of the organisation to which they supply goods or services.

2.5.4 Creditors

Just like a consumer, organisations purchase goods and services. Since it is likely that they will get discounts or other incentives when buying in bulk, they usually buy on credit. The amount of credit and the terms offered also play an important role in managing the relationships with creditors (suppliers). An organisation with the right credit resources may experience power and prestige in local markets. Improved prestige can provide a better negotiating position with other suppliers, creditors and distributors.

2.5.5 Labour market

Just as customers are a key element of organisation success, so are the employees that an organisation hires to represent their interests. Having quality human resources is very important. The lack of skilled people can cripple an organisation and foster a negative customer experience, which could lead to customer dissatisfaction.

All competitors obtain their employees from the same labour market that provides skilled and unskilled workers. Where the labour market does not have a sufficient supply of workers with specific scarce skills, fierce competition takes place between organisations for these employees. Investing in training and other drivers of job satisfaction are important so that organisations can retain high quality employees.

Activity 3.2

Link each of the activities below to the specific factor in the competitive environment that it relates to.

a. doing market research to determine customer satisfaction
b. predictions and forecasting of future demand and supply of the organisation
c. recruitment of employees that fit the culture of the organisation
d. building good relationships with the organisations that supply raw material as input in the production process
e. determination of future employee needs

f. drawing up of a credit policy whereby organisations that supply products will be paid on time
g. conducting exit interviews with employees that quit
h. conducting market research on the trends and patterns in the market for a specific product

Feedback on activity 3.2

a. customer base
b. competitive position
c. labour market
d. suppliers
e. labour market
f. creditors
g. labour market
h. competitive position

3 Influence of factors in the internal environment

As illustrated in figure 3.1, the factors in the internal environment of the organisation include corporate culture, organisation leadership, human resource policies, industrial relations and controls at organisation level such as the code of conduct. We will discuss each of these factors in the subparagraphs that follow.

3.1 Corporate culture

CORPORATE CULTURE

Corporate culture entails employees' shared beliefs, values and symbols (see also core values).

It guides individual actions and behaviour at the unconscious level. Corporate culture can be seen as the glue that holds everyone together or the compass providing direction that creates a common ground for teamwork. It presents a language for interpreting issues and events, thereby reducing uncertainty.

The value of corporate culture lies in understanding the organisation's culture and how this culture can support the organisation's strategy and strategic objectives. The strengths of an organisation's corporate culture can be used to promote the drive towards success.

Since corporate culture drives perceptions, attitudes and behaviour which have an effect on business results, organisations should look for a culture-fit when appointing new employees. Skills can be acquired, but it is not easy to change a person's attitude or behaviour. An example is an organisation that places a high value on their customers' satisfaction and loyalty. They should appoint people that will fit in with the culture of "the customer comes first".

3.2 Organisation leadership

An organisation's leadership includes executives and managers who run the daily operations of the organisation.

Leaders should effectively manage the organisation's resources and look for ways to improve the organisation by inspiring their employees to do their best work. Leadership should provide the vision, direction and purpose for growth of the organisation.

3.3 Human resource policies

HUMAN RESOURCES

The term human resources (HR) refers to the workforce (employees) of an organisation.

HR is also the name of the function within an organisation that is responsible for implementing strategies and policies relating to the management of the employees (human resources). Over time the function of human resources has changed as management demanded a quantitative as well as a strategic approach to workforce management in order to gain a competitive advantage.

Human resource policies refer to formal decisions, established by an organisation, in order to support their administrative personnel functions, resource planning, employee relations and performance management. HR policies provide an organisation with a tool to manage risk by staying up to date with current trends in employment standards and legislation.

Each organisation has a different set of circumstances and develops an individual set of human resource policies. These policies should be set in such a manner as to support the organisation's vision and their main objective.

Since there are certain requirements for diversity, ethics, training and labour laws to be adhered to, organisations should be aware that these requirements should be incorporated into their HR policy and it may have an influence on their strategy development. For example, in order to dismiss an employee in accordance with employment law requirements, it will normally be necessary to meet provisions within employment contracts and collective bargaining agreements with trade unions.

3.4 Industrial relations (labour relations)

INDUSTRIAL RELATIONS

Industrial relations deal with the employment relationship (workplace relationships).

Industrial relations specifically refer to the management of certain events such as workplace conflict and the role of organised labour (trade unions).

3.5 Controls at organisation level (such as code of conduct)

The code of conduct sets out the disciplinary procedure of an organisation, the nature of offences and disciplinary actions to be followed. The main purpose of a code of conduct is to create sound labour relations and thereby prevent conflict in the workplace. Conflict

in the workplace can seriously affect the performance of employees and therefore influence strategy development.

Other internal controls, such as performance agreements and policies, will set out specific rules that should be adhered to.

Activity 3.3

The following are examples of strategies that can have a positive effect on the profits of organisations. Link each example to the specific factor in the internal environment that it relates to.

a. The employees of Centex petrol stations treat all customers as "Number 1".
b. The employees of Save Supermarkets are loyal and consider themselves as being part of a happy family. There is no conflict between the employees and management and employees do not join in disruptive actions of trade unions.
c. Bestbank has policies that support their employee relations. Their employees know that they are treated according to the newest trends in employment standards and legislation and will support the vision of the organisation so that Bestbank can gain a competitive advantage over other banks.
d. The managers of Yourown pharmacies always look for ways to improve their service to their customers and inspire their employees to do their best work.
e. All employees at Super Stores are required to sign a code of conduct when they are appointed. This prevents conflict between employees as well as employees and management and creates sound labour relations that have a positive effect on the performance of employees.

Feedback on activity 3.3

a. corporate culture
b. industrial relations
c. HR policies
d. organisation leadership
e. organisation level controls

4 Summary

In this study unit, we discussed factors in the organisation's environment that may influence its strategy development. The environment was divided into the external and internal environment, with five main factors identified under each.

After having worked through this study unit, we are sure that you will agree that many environmental factors exist that could influence the development of the strategy of the organisation. As a way of considering various factors, management often makes use of analytical models that separate these factors into groups in order to make analysis of the environment easier. Examples of such models are SWOT analysis and Porter's Five Forces Model. We will discuss these models in the next study unit that deals with strategic planning processes and approaches.

Self-assessment activity

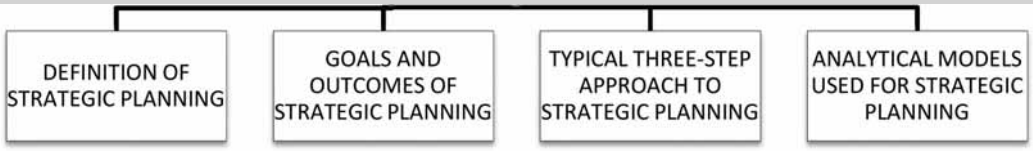
After having worked through the study unit, you should be able to answer the following questions:

a. Identify four external environmental factors and give a short explanation of how each can have an influence on an organisation's strategy development.
b. Identify five factors in the competitive environment and explain how they can influence strategy development.
c. Identify the main internal environmental factors and give a short explanation of how each can have an influence on an organisation's strategy development.

STUDY UNIT 4

Strategic planning processes and approaches

In this study unit



1 Introduction

In the previous three study units, we discussed the elements that have an influence on the development of the strategy of an organisation, namely the mission, core values and vision of the organisation, as well as the influence of stakeholders and environmental factors. In figure 1, the diagrammatic overview of part 1, these elements are represented by the three circles.

In this study unit, we will focus on the strategic planning process that includes selected basic approaches and analytical models. In the big picture in figure 1, this is the content of the rectangle next to the arrows.

2 Definition of strategic planning

STRATEGIC PLANNING

Strategic planning is the process of defining the organisation's strategy and making decisions about the allocation of its resources to follow this strategy. The allocation of resources includes the organisation's capital and people.

Based on the definition above, strategic planning is the process that determines the strategic plan (future course) of an organisation, typically for three to five years (long-term), but sometimes for up to 20 years, depending on the industry in which the organisation operates.

An organisation needs to know exactly what its current position is and then determine where it wants to go and how it plans to get there (See steps 1, 2 and 3 in figure 4.1). The outcome of this process is called the "strategic plan".

Although strategic planning can be used successfully to plan an organisation's longer-term direction, it cannot reliably predict how the market will react, or the problems that will come up in the future. The strategic plan will have to be adjusted and improved to enable the organisation to survive and succeed in the ever-changing business environment.

3 Goals and outcomes of strategic planning

A principal goal when drafting a strategic plan is to develop it in such a way that it can be easily turned into action plans. An action plan must be changeable into day-to-day tasks and projects that employees can identify with and can follow to achieve the plans. The part of the strategic plan that should be executed during the next financial year normally becomes the targets and objectives of the budget. You will learn more about Budgeting in MAC2601 and MAC3701.

It therefore follows that the choice of words as well as the simplicity thereof are both very important aspects to ensure that the strategic plan makes sense to the employees who have to carry it out. The use of conceptual terms that allow for different interpretations by different employees should not be part of a strategic plan.

Typically, organisations have several goals at the same time that can be dealt with in the following ways:

Goal congruency – has to do with how well different goals blend with each other. Does goal "X" go well together with goal "Z"? Do they match to form an integrated strategy? The goals of one part of the organisation (division or business unit) should combine well with goals of other parts of the organisation. An organisation may harmonise goals so that they do not undermine each other or are in conflict with other goals.

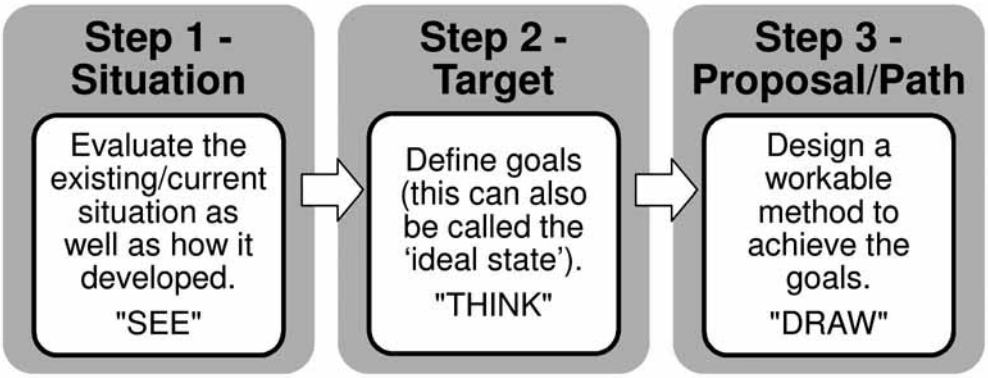
Goal hierarchy – has to do with the inclusion of one or more goals within other goal(s). A recommended method is to have short-, medium-, and long-term goals. In such a model, one can expect to attain short-term goals with relative ease as they stand just slightly above one's reach. At the other end, long-term goals appear very difficult and almost impossible to attain.

Goal sequencing – entails that one goal is used as a method of obtaining the next goal. Typical to goal sequencing a person or group starts by attaining the uncomplicated short-term goals. They then step up to attain the medium-term goals. After achieving that, they attempt to achieve the long-term goals. This method can generate a "goal stairway".

The strategic planning process can be formal or informal, as long as the outcome of the process is specific strategic objectives of the organisation as well as methods to achieve them. The top management of the organisation, with or without consultants, usually go away for a few days on a "lekgothla" or "break-away" to develop or revise the strategic plan.

4 Typical three-step approach to strategic planning

There are many approaches to strategic planning but a three-step process is typical, as illustrated in the following figure:



Source: Author, 2012

FIGURE 4.1: Typical three-step strategic planning approach

The above approach is also called "*See-Think-Draw*":

1. **See** – determine and evaluate the current situation
2. **Think** – define goals
3. **Draw** – map a plan to achieve the goals

Strategic planning is a process in which various decisions must be made, which include:

i. The strategic objectives of the organisation must be set.
ii. The resources to be used to attain the objectives must be stipulated.
iii. The policies that are to govern the acquisition and use of the resources must be decided (controls at organisation level; see study unit 3, section 3 regarding the internal environment).

5 Analytical models used for strategic planning

Different analytical models can be used to perform strategic planning in organisations. We will discuss two, namely SWOT analysis and Porter's five forces model because they are used frequently.

5.1 SWOT analysis

SWOT ANALYSIS

The SWOT analysis approach is to identify and analyse internal and external factors, that are of strategic importance, and classify them into strengths, weaknesses, opportunities and threats.

From the definition above, you would no doubt have realised that **SWOT is an acronym for Strengths, Weaknesses, Opportunities and Threats**. By definition, Strengths (S) and Weaknesses (W) are related to internal factors over which the organisation have some measure of control and Opportunities (O) and Threats (T) are related to external factors over which the organisation have essentially no control.

NOTE

The key purpose of SWOT analysis is to create an organisation-specific business model that has identified the strategies that will synchronise the capacity and means of the organisation with the competitive environment in which the organisation operates.

5.1.1 An overview of SWOT analysis

SWOT analysis is the best-known instrument for the analysis of the overall strategic position of an organisation and its environment. SWOT analysis is one of the most useful instruments for strategic planning, because it views all constructive and unconstructive internal and external factors that can have an effect on the success of the organisation. It is a strong instrument, but it is subjective and should be used only as a guide, and not as an instruction.

A consistent study of the environment in which the organisation operates helps in forecasting (predicting) changing trends and the incorporation of these in the decision-making process of the organisation.

5.1.2 Defining strengths, weaknesses, opportunities and threats

TABLE 4.1: An overview of the internal factors (Strengths and Weaknesses) and examples of each

INTERNAL FACTORS	
STRENGHTS	WEAKNESSES
• Strenghts are the virtues which enable the organisation to attain its mission. • Strengths are the foundation on which success can be built and sustained. It is the beneficial aspects of the capabilities of the organisation – what the organisation has expertise in. • Strengths can be tangible or intangible. • Examples of strengths are: – human competencies (the qualities and behaviour of the employees, individually and also as a team), – committed employees, – process capabilities, – huge financial resources, – products and services (specific products or an extensive product line), – no debt.	• Weaknesses are the virtues that restrain the organisation from fully realising its mission and achieving its potential. • Weaknesses negatively influence the growth and success of the organisation. • Weaknesses are those factors which do not meet the organisation's required standards. • Weaknesses are controllable and should be reduced and removed for instance – new machinery can be purchased to overcome the problem of obsolete machinery. • Examples of weaknesses: – insufficient research and development facilities, – high employee turnover, – narrow product range, – huge debts, – complex decision-making process, – poor decision-making, – depreciating machinery, – extensive wastage of raw materials

TABLE 4.2: An overview of the external factors (Opportunities and Threats) and examples of each

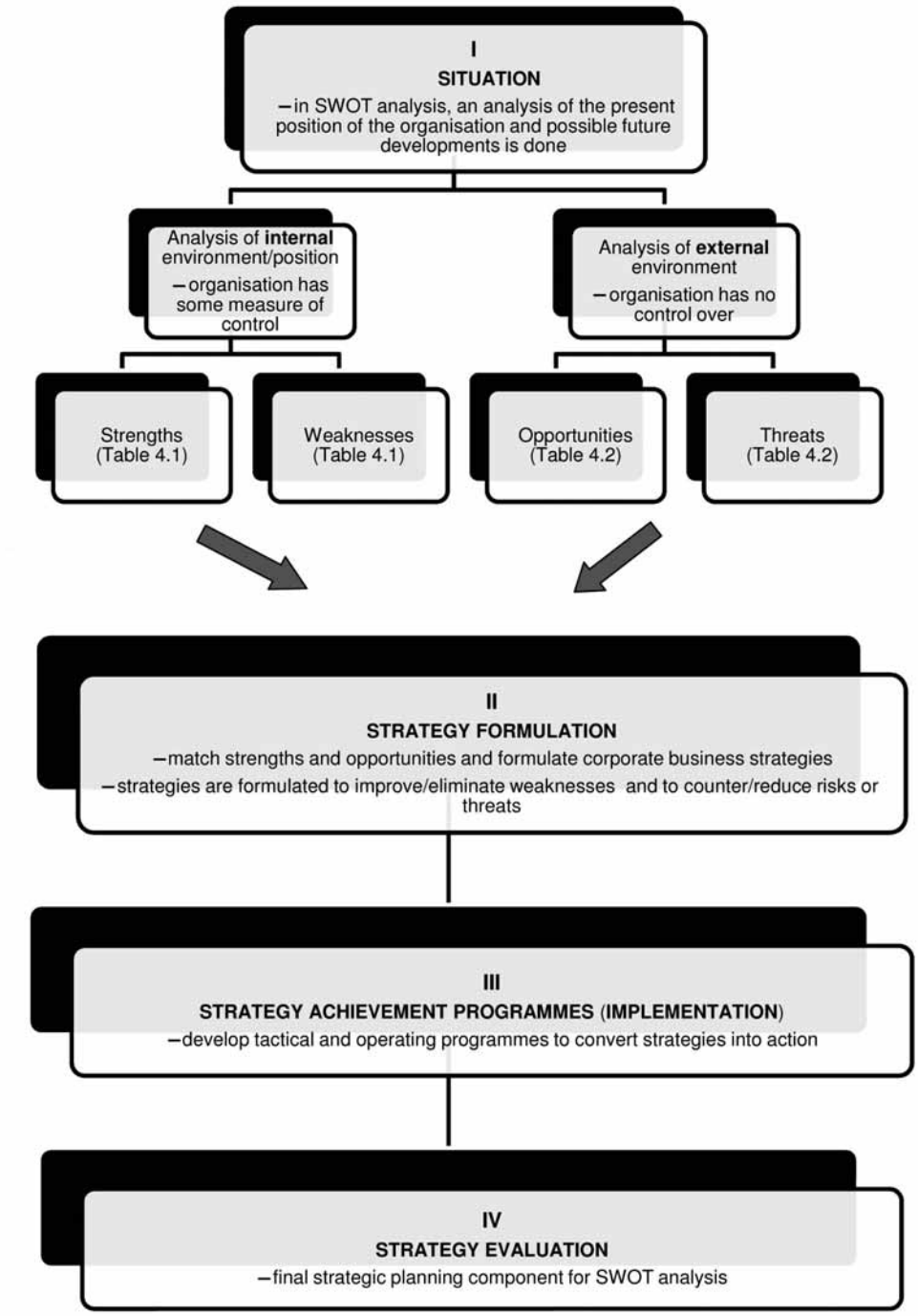
EXTERNAL FACTORS	
OPPORTUNIES	THREATS
• Opportunities typically arise from circumstances in the external evironment that the organisation can use to enhance their profits. • Organisations can obtain a competitive advantage by recognising and grasping opportunities as they arise. • Opportunities arise from: the market, competition, industry, government and technology. • Opportunities are often challenging, for example: The selection of the targets that will best serve the clients, while still getting desired results, is a difficult task. • An example of an opportunity: – the increase in demand for telecommunications, together with deregulation, is a great opportunity for new organisations to enter the telecom sector and compete with existing organisations.	• Threats arise when circumstances in the external environment jeopordise the success and profitability of the organisation. • Threats cannot be controlled. A threat jeopordises the stability and survival of an organisation. • When threats combine with the weaknesses, they compound the vulnerability of the organisation. • Examples of threats are: – strikes by workers in the industry, – unrest due to trade union action, – technology that change frequently, – increasing competition that results in excess capacity, – price wars among competitors, – decreasing profits in the industry.

Benefits from using SWOT analysis for strategic planning are:

- identification of core competencies of the organisation and building on those strengths
- correcting internal weaknesses
- protecting against external threats
- monitoring of their overall external environment – they recognise and take advantage of new opportunities quicker than what their competitors do

The SWOT analysis approach to strategic planning

To simplify the development of a strategic plan by using SWOT analysis, we have summarised the approach in figure 4.2. You will notice that the process consists of four main components (numbered I–IV) and indicated in the figure in bold capital letters.



Source: Author, 2012

FIGURE 4.2: Summary of the strategic planning process using SWOT analysis

I. **SITUATIONAL ANALYSIS** – From figure 4.2, you will see that an analysis of the organisation and its environment, known as a situational analysis is the first step in the SWOT strategic planning process. This agrees to step 1 of the typical three-step approach to strategic planning illustrated in figure 4.1.

   In SWOT analysis, the situational analysis should cover the organisation and its environment currently, as well as how the environment may develop in the future. This entails the process of collecting and scrutinising information as well as analysing

the environment (external and internal environment) that may have an influence on the organisation. When an organisation's managers develop its future strategy, they must consider environmental factors.

An organisation's ability to compete and survive in the long-term will depend on how well the managers have learnt to identify environmental factors and to estimate the extent or degree of each of the factor's impact on the corporate strategy.

As part of the situational analysis, you will see that internal factors are identified and analysed into strengths and weaknesses. Similarly, external factors are identified and analysed into opportunities or threats that can have an influence on the strategy development of an organisation.

Not all of these factors will be of crucial importance. However, customers and competition will usually be of crucial importance when analysing external environmental influences. Customer strategy should be formulated by thinking about changes in the market environment, how these could influence groupings of customers, and whether those customer groupings are the ones the organisation wishes to serve.

II. **STRATEGY FORMULATION –** This is the process when decisions are made on the best course of action to achieve the organisation's strategic objectives. (Refer to study unit 1 section 2.5 and figure 1, the diagrammatic overview of part 1).

III. **STRATEGY ACHIEVEMENT PROGRAMMES (IMPLEMENTATION) –** This entails putting the strategy into action or making the strategy work as intended by developing detailed plans. It may include redesigning the organisation structure, distribution of resources as budgeted for and managing its human resources.

IV. **STRATEGY EVALUATION –** This is the final step at the end of the year when performance is measured to determine the success of the implementation of the detailed plans. This can be done in conjunction with the planning session for the following year. Corrective action can be taken by adjusting plans or incorporating new plans to attain the strategic objectives.

Activity 4.1

The following are examples of either strengths or weaknesses. Group together all possible strengths and all possible weaknesses.

a. high wastage of raw material
b. low debt
c. employees that are committed
d. obsolete machinery
e. huge financial resources
f. skilled workers
g. high employee turnover

Feedback on activity 4.1

Strengths:	Weaknesses:
low debt	high wastage of raw material
employees that are committed	obsolete machinery
huge financial resources	high employee turnover
skilled workers	

Activity 4.2

The following are examples of either opportunities or threats. Group together all possible opportunities and all possible threats.

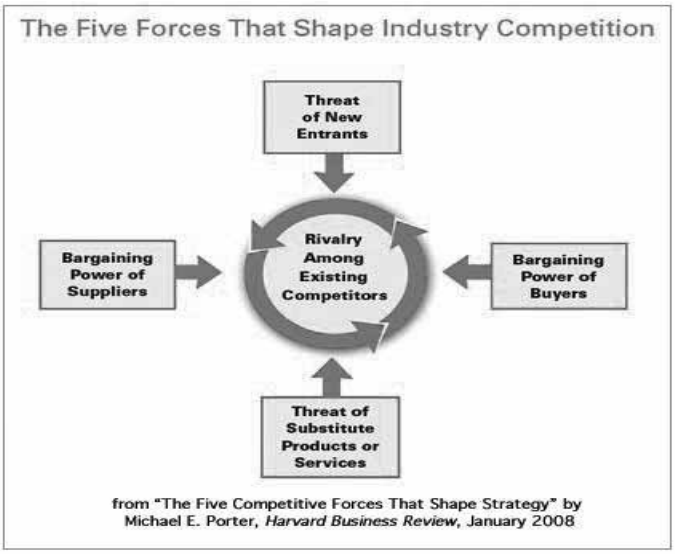
a. a strike by workers in the industry
b. costly changes in technology
c. increased demand for the organisation's products
d. excellent security of supply
e. strong competitors in the market
f. low interest rates
g. high tax rates
h. increased competition
i. increased minimum wages

Feedback on activity 4.2

Opportunities:	Threats:
increased demand for the organisation's products	a strike by workers in the industry
reliable suppliers	costly changes in technology
low interest rates	high tax rates
	increased competition
	increased minimum wages
	strong competitors in the market

5.2 Porter's Five Forces Model

Porter's Five Forces Model assumes that the **competitive environment** within an industry depends on five forces that has an impact on the organisation's success, namely, threat of new entrants, threat of substitute products or services, bargaining power of suppliers and bargaining power of buyers and the strength of rivalry among existing competitors. This is presented in figure 4.3 below:



Source: Porter (2008:4)

FIGURE 4.3: The Five Forces That Shape Industry Competition

The model proposes that the five forces should be used as a basis for identifying the competitive strengths and weaknesses that the organisation is facing from within, as well as the opportunities and threats that the organisation is facing from its competitive environment.

The five forces referred to above are very important with regard to strategy formulation. The potential influence of these forces differs from industry to industry. Together these forces determine the profitability of the industry. They influence the prices that can be charged as well as the cost that can be endured. It also affects the size of the investment that is required to compete in the industry. Managers should use the five forces framework to assist them in determining the competitive structure of their industry before making strategic decisions.

We will now discuss the five forces represented in the model.

5.2.1 Risk of entry by potential competitors (threat of new entrants)

Potential competitors entail the organisations that are not competing in the industry at present but that have the potential to do so. The entry of new competitors enlarge the capacity of the industry, it creates a competition for market share, and lowers the current costs for customers. The threat of entry by potential competitors is regarded as being a function of barriers to entry.

BARRIERS TO ENTRY

Barriers to entry are factors that prevent new players to enter a specific industry or market. These factors refer to the position of the current players, for example, if they have good economies of scale, customers are loyal to their brand and they have a well-established distribution channel.

TABLE 4.3: Barriers to entry

Barriers to entry
• Economies of scale • Brand loyalty • Government regulations • Customer switching costs • Absolute cost advantage • Established distribution channels (ease of distribution) • Strong capital base

- **Strength of rivalry among current competitors**

The competition for market share between organisations in an industry is called rivalry. Intense rivalry among well-known organisations causes a great threat to profitability due to pressure on prices.

TABLE 4.4: Factors determining the strength of rivalry

Factors determing the strength of rivalry
• Demand conditions • The competitive structure of the industry • The amount of fixed costs • The presence of global customers • Absence of swithching costs • The growth rate of industry • Extent of exit barriers

BARRIERS TO EXIT

Barriers to exit are factors that prevent an organisation from leaving (exiting) the market for a specific product. If the cost of exiting is higher than the cost (losses) of remaining in the market, the organisation will be prohibited from exiting and will still be competing for market share.

TABLE 4.5: Barriers to exit

Barriers to exit
• Substantial investment in non-current assets • High retrenchment costs • Penalty clauses in supplier contracts • Penalty clauses in rental agreements • Potential upswing in economic conditions

5.2.2 Bargaining power of buyers

"Buyers" refer to the final consumers of the product or the organisations that deliver the industry's product to the final consumers. Bargaining power of buyers entail the potential that buyers have to bargain down the prices charged by the organisations in the industry. It also refers to the potential of buyers to raise the organisation's cost by demanding a higher quality product or service.

Buyers that have strong bargaining power can diminish profits in an industry by demanding that organisations charge lower prices. They have sufficient information about the market and the product and they purchase in large quantities. They also focus on high-quality products.

5.2.3 Bargaining power of suppliers

"Suppliers" refer to the organisations that supply inputs to the industry. The bargaining power of suppliers refer to the potential that suppliers have to raise the prices of inputs (such as raw material or services) or the cost of an industry in a number of other ways.

Strong suppliers can diminish industry profits by raising the cost to organisations. The products of strong suppliers have only a few alternatives or substitutes since it is exceptional or inimitable. The existence of strong suppliers results in high switching cost (it is expensive for the organisation to adapt its production set-up to accommodate a different supplier's product). Their product forms a significant part of or input to the buyer's (organisation's) product. The buyers are not important to strong suppliers.

5.2.4 Threat of substitute products

SUBSTITUTE PRODUCTS

Substitute products refer to alternative products having the capability of effectively satisfying customers' needs (for example, plastic bottles instead of glass bottles).

Substitutes pose an upper limit (ceiling) on the possible returns of an industry by setting a limit on the price that those organisations can charge for their product in an industry. The fewer close substitutes a product has, the greater is the chance for the organisations in the industry to raise their product prices and earn higher profits (supposing that other factors are equal).

The power of the five forces varies from industry to industry. Whichever the industry, these forces affect the profitability because they affect the prices charged, the costs and the capital investment that is essential for an organisation to survive in the industry. Porter's five forces model also helps in making strategic decisions because managers use it to analyse the industry's competitive structure.

Activity 4.3

From the list below, select only those factors that serve as barriers to entry:

- brand loyalty
- established distribution channels (ease in distribution for current competitor, meaning that new entrants will have to set up their own, distribution channels)
- extent of exit barriers
- absolute cost advantage
- government regulations
- competitive structure of the industry
- customer switching costs
- strong capital base

Feedback on activity 4.3

Factors that serve as barriers to entry in an industry:

- brand loyalty
- established distribution channels
- absolute cost advantage
- government regulations

- customer switching costs
- strong capital base

Activity 4.4

Which of the following statements relate to Porter's five forces model? Select all that apply.

a. The forces in the competitive environment within an industry affect the organisation's success.
b. Together these forces determine the profitability of the industry because they influence the prices that can be charged and the cost that can be endured. It also affects the size of the investment that is required to compete in the industry.
c. Managers should use the five forces framework to assist them in determining the competitive structure of their industry before making strategic decisions.
d. It identifies core competencies of the organisation and build on those strengths.

Feedback on activity 4.4

Statements a, b and c relate to Porter's five forces model.

Statement d relates to SWOT analysis.

Activity 4.5

Evaluate the following list of statements and identify which statements are correct.

a. The threat of entry by potential competitors is regarded as being a function of barriers to entry.
b. The competition for market share between organisations in an industry is called rivalry.
c. Intense rivalry among well-known organisations causes a great threat to profitability due to pressure on prices.
d. Bargaining power of buyers entail the potential that buyers have to bargain down the prices charged by the organisations in the industry. It also refers to the potential of buyers to raise the organisation's cost by demanding a higher quality product or service.
e. The bargaining power of suppliers refer to the potential that suppliers have to raise the prices of inputs (such as raw material or services) or the cost of an industry in a number of other ways.
f. Substitute products refer to alternative products having the capability of effectively satisfying customers' needs.
g. Porter's five forces model helps in making strategic decisions, because managers use it to analyse the industry's competitive structure.

Feedback on activity 4.5

All the statements are correct.

6 Summary

In this study unit, we defined strategic planning as the process of considering an organisation's future course. The goals of strategic planning were discussed and it was stressed that an organisation should coordinate goals so that they do not conflict with each other. We then discussed the various approaches to strategic planning. Lastly, the two analytical models, namely SWOT analysis and Porter's five forces, were discussed in detail.

In the next part, we will focus on financial management, financing and the cost of capital.

Self-assessment activity

After having worked through the study unit, you should be able to answer the following questions:

a. Explain the meaning of strategic planning and name the three possible key questions strategic planning can be expected to deal with.
b. Explain the terms goal congruency, goal hierarchy and goal sequencing.
c. List the two factors in the external environmental analysis that will always be of crucial importance for SWOT analysis.
d. What is the main goal of drafting a strategic plan?

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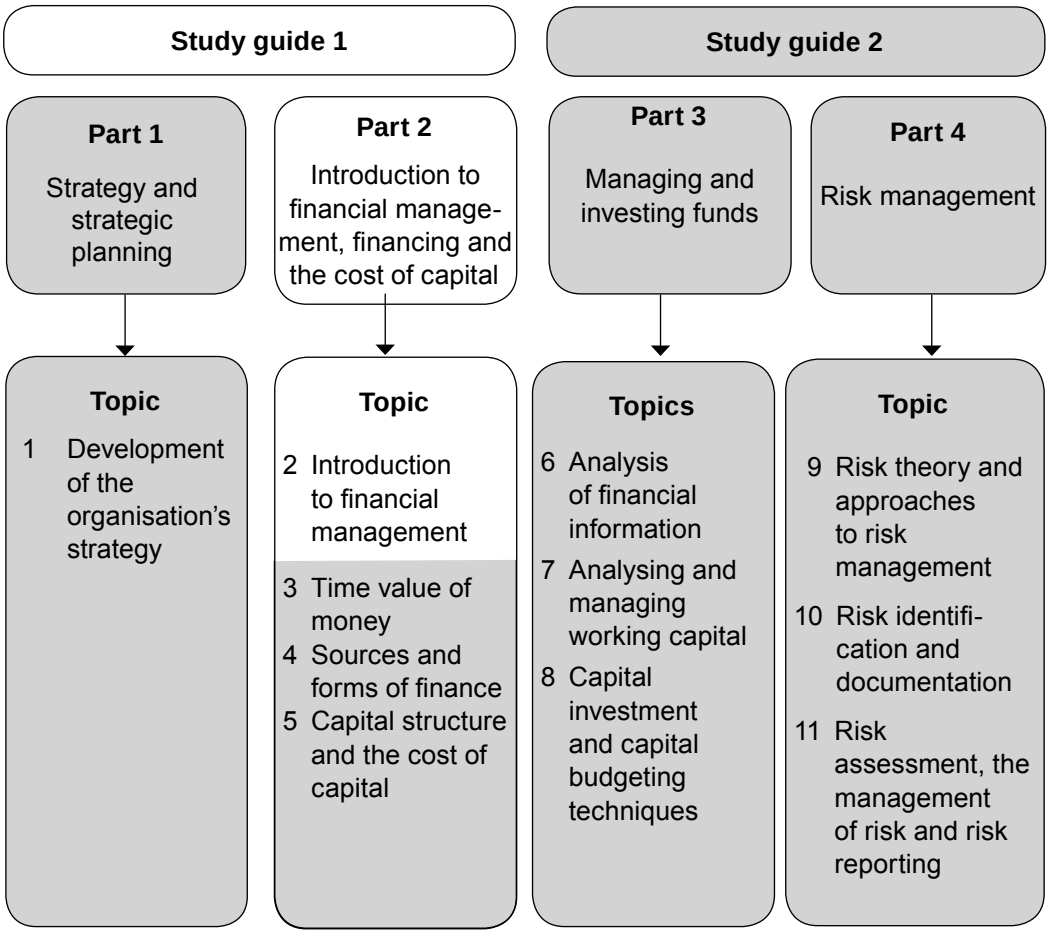
PART 2

Introduction to financial management, financing and the cost of capital

PURPOSE

The purpose of part 2 is to serve as introduction to financial management, financing and the cost of capital.

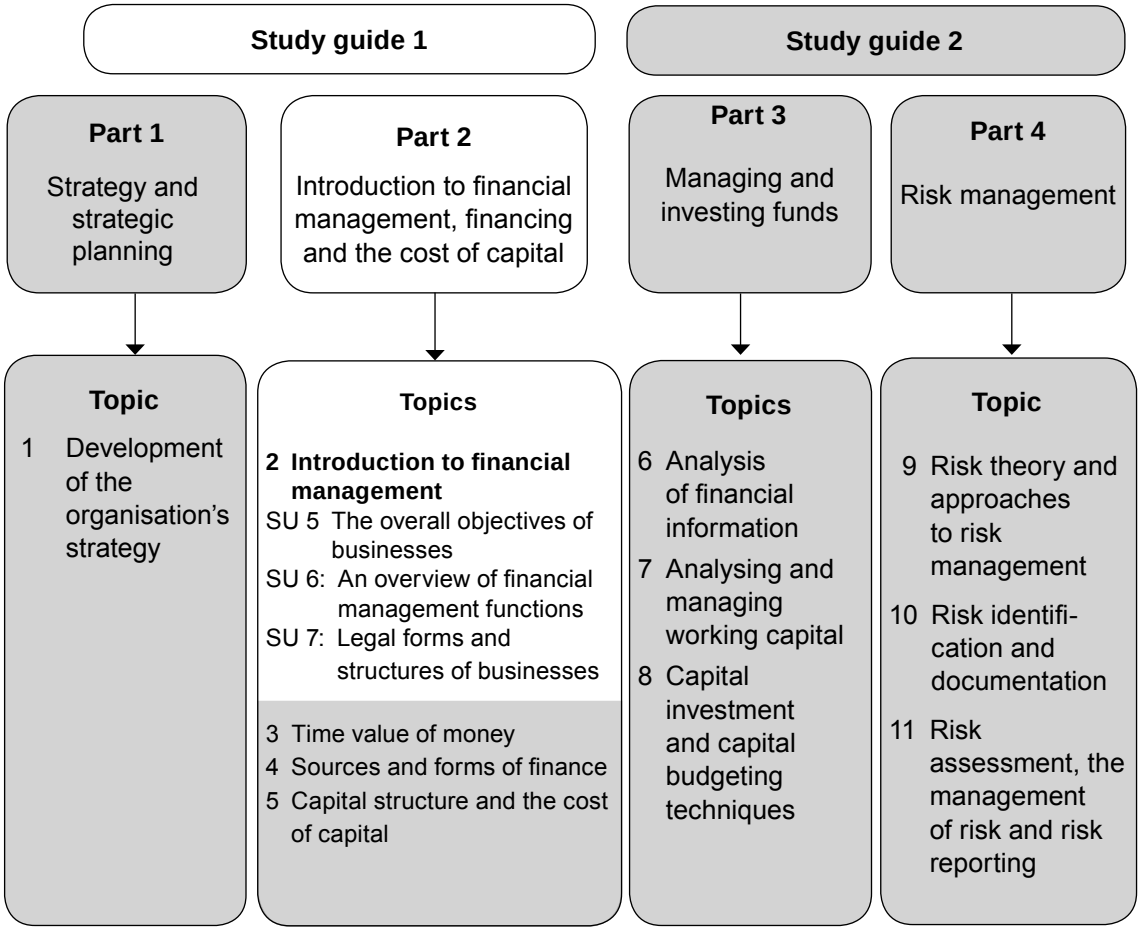


Introduction to financial management

LEARNING OUTCOMES

After studying this topic, you should be able to:

- describe the traditional overall objective of businesses and identify the criticisms against it
- explain the current change in focus in the overall objective of businesses
- discuss the traditional function of financial management
- explain the change in focus in financial management
- define the concepts of strategic financial management and financial management
- evaluate the different legal forms available to businesses
- discuss the factors that might influence the structure of the organisation



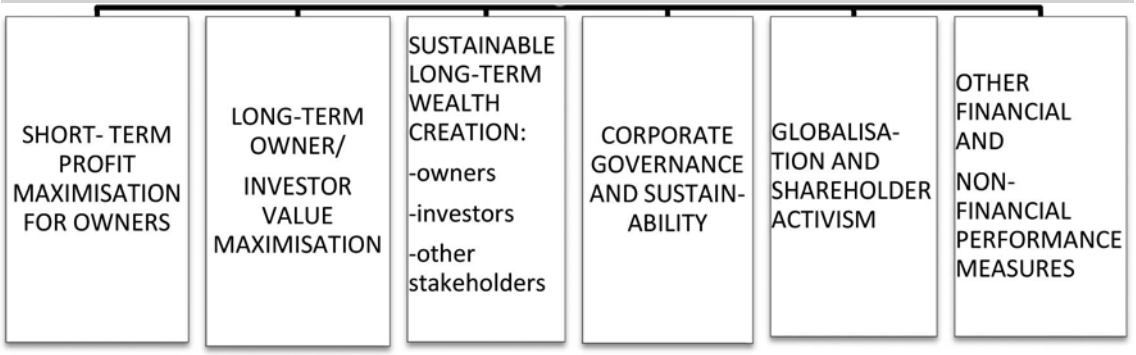
INTRODUCTION

In this topic, we will start with a discussion on the overall objectives of businesses and how that has changed due to pressure from groups (stakeholders) other than the owners of the businesses. The role of the financial manager is to support the business in achieving its overall objectives and strategies. We will discuss in broad terms how the financial manager can assist in various roles and functions. This is followed by a discussion on factors to consider when deciding on the legal form when starting a business. Hand-in-hand with the legal form is the organisational structure of the business. We briefly discuss the factors that influence the structure and how that would change over time as the business matures.

STUDY UNIT 5

The overall objectives of businesses

In this study unit



1 Introduction

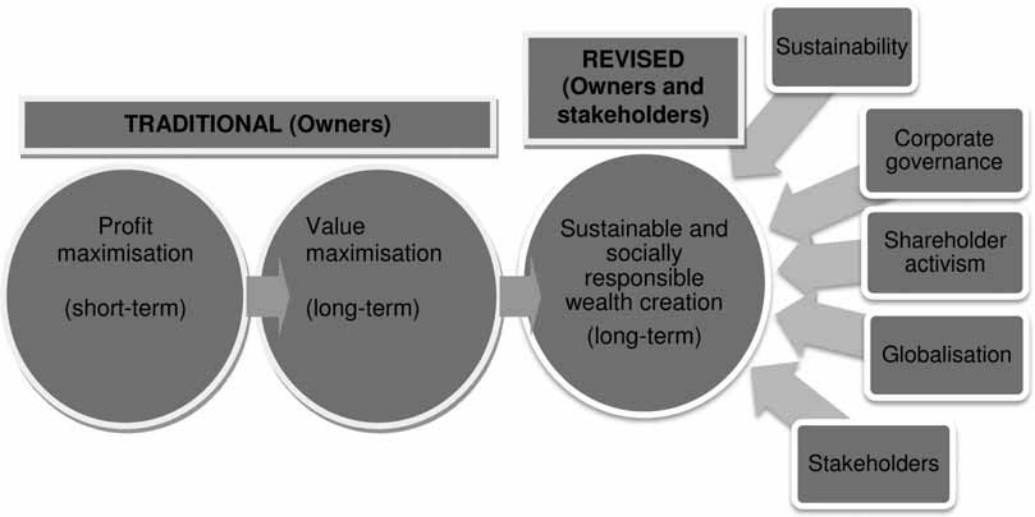
You will recall that we identified and discussed various elements that are relevant to, or influence the development of the strategy of an organisation, in part 1 of this guide. We also identified and discussed processes and approaches used in strategic planning. We highlighted how changes in the organisation's environment may necessitate adaptations to the proposed plans of management.

NOTE

While it was explained earlier in this study guide that the term "organisation" includes a range of organisations, some of which pursue profits and others that are non-profit organisations (NPOs), this topic only discusses organisations that pursue profits. We will refer to the term businesses.

In order to understand how financial managers (you) can best serve the business employing you, you need to understand what the overall objectives of businesses are. We will also discuss factors that influence business objectives.

The following figure illustrates an overview of the content of this study unit – The development of the overall objectives of businesses.



Source: Author, 2012

FIGURE 5.1: The development in the overall objectives of businesses

2 Short-term profit maximisation for owners

Traditionally, the overall objective of a business was the maximisation of profit to the exclusion of everything else. This overall objective originated from traditional economic theory, a theory formulated from the business' point of view.

PROFITABILITY

Profitability is the term used to describe the annual return or compensation earned on an investment.

The profitability of a business is therefore of importance to its owners and other potential investors. The profitability of an investment is measured based mainly on accounting profit or various ratios based on this profit, for example, return on assets, earnings per share (EPS) and so on. These ratios are discussed in part 4 of this module, namely "Managing of funds".

The practice of measuring annual profitability based only on accounting and financial indicators (ie EPS) has been found to have drawbacks, because short-term profit measures:

- Ignore risk – as risk increases, a higher return would be required.
- Do not distinguish between profit earned and cash flows generated – a distinction required by an investor and other finance providers.
- Are an annual measure (measured over a relatively short period of time – usually one year) whereas owners are interested in financial returns across a number of years.
- Are only a financial summary of the effects of the economic activity of the past financial year and do not reflect the strategic behaviour employed to achieve it.
- Encourage short-term returns at the expense of the development of the business in the long term. An example of the latter is where product- and/or staff development cost are cut to improve the profit for the year (short-term objective). Due to these cost cuts, the business will show a higher profit for the current period but it can be at the expense of the long-term development of the business. Another example is that cuts in product development costs can lead to the products becoming obsolete in future, with no new products developed to keep the organisation profitable in the long term.

- Can be manipulated by the use of creative accounting. Creative accounting is the use of loopholes in financial regulations in order to gain an advantage or to present financial figures in a misleadingly favourable light. Errors, omissions and misstatements are examples of forms of creative accounting.

From the discussion above, we can therefore conclude that, regardless of the way profit is measured, "profit" is a short-term indicator that does not take the long-term overall objectives of business owners into account.

Activity 5.1

Give reasons why profit measures are regarded as short-term measures.

Feedback on activity 5.1

- It is measured over a short period – usually one year.
- The results of these measures can be improved in the short term by compromising the long-term growth of the business.
- It does not take the long-term objectives of owners – to get financial returns over a number of years – into account.

3 Long-term owner/investor value maximisation

In order to address the problems encountered with the short-term profit maximisation as the overall objective of a business, the overall objective was amended to the *maximisation of owner/investor value* – a long-term objective.

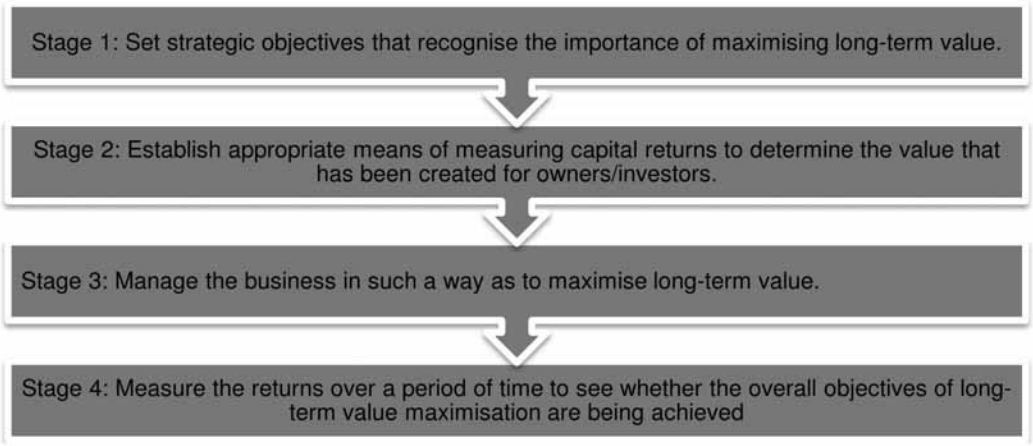
Smart businesses, their owners and managers, realised that it is foolhardy to sacrifice long-term growth for short-term profit maximisation. The focus shifted to long-term value creation and value maximisation.

The change in focus to long-term value maximisation means that owners are more interested in capital growth in their investment than achieving maximum accounting profit in any one financial year.

CAPITAL GROWTH

Capital growth is the growth of an investment in a business. It means that the investment can be sold after a few years for more than it was bought for.

The creation of long-term owner/investor value involves a process that is divided into four stages, illustrated in the following figure:



Source: Author, 2012

FIGURE 5.2: Process of creating long-term owner/investor value

The trading price of shares in listed companies is published in newspapers and is an indication of the value of a shareholder's investment in a specific company. The value of non-listed businesses (private companies, close corporations, partnerships and sole proprietorships) are more difficult to determine.

Activity 5.2

Describe in your own words what is meant by "maximisation of long-term owner/investor value" as the overall objective of a business and its managers.

Feedback on activity 5.2

It means that the managers should take action and make decisions to achieve the overall objective of the business that increase the value of the owners' investments, thereby maximising the value of the owners' investment in the business in the long term. Any actions that increase profits in the short term, but are detrimental to long-term growth, are not entertained.

Activity 5.3

Explain in four steps how managers can plan to achieve the business objective of owner/investor long-term value maximisation.

Feedback on activity 5.3

You can refer to the four stages as illustrated in figure 5.2.

4 Sustainable long-term wealth creation (owners/investors and other stakeholders)

Recently, more emphasis has been placed on businesses' ability to maximise the value of owners/investors in a *sustainable* way. In addition to shareholders/owners, a business has other stakeholders that include employees, customers, suppliers, the community and environmental activists. When trying to achieve the overall objective of a business, namely owner/investor value maximisation, other factors such as interests of other stakeholder groups, the level of risk and ethical conduct need to be considered.

Let us remind you that owners/investors and other stakeholders have different priorities. Owners/investors are concerned about increasing the market value of their investment and cash returns while other stakeholders are concerned about jobs, taxes, the environment, and so on. The necessity of finding a balance between the conflicting needs of all the stakeholders recently became very important.

Owners of businesses face bad publicity when actions are taken that benefit owners in the short-term to the detriment of other stakeholders affected by these actions. Public pressure has resulted in owners scaling down their expectations of value maximisation at all cost. For example, owners now accept that money has to be spent on preventing pollution, training employees, providing health care (ie HIV/AIDS programmes) and complying to employment equity requirements.

Nowadays, shareholders are also more aware of the corporate social responsibilities of businesses and they expect that the company in which they invest should state and execute its corporate social responsibilities.

It is therefore important to satisfy the *needs of all stakeholders* as opposed to only the needs of owners, because when all stakeholders benefit, the value of the business will be maximised and sustainable wealth creation for all stakeholders will be achieved. To understand what sustainable wealth means, the term sustainability needs to be defined:

SUSTAINABILITY FOR HUMANS

Sustainability for humans is the potential for long-term maintenance of well-being which has environmental and social dimensions.

SUSTAINABILITY FOR BUSINESSES

Sustainability for a business means that all their products, processes and manufacturing activities meet customer needs, while at the same time treating the environment in such a manner that it does not decrease the ability of future generations to meet their own needs.

This entails that products, processes and activities should be designed and executed in such a way that current environmental concerns (eg the use of renewable resources) are taken into account while still maintaining a profit. A business should use sustainable development and distribution methods to influence the environment, growth of the business and society. Sustainable development within a business can create value for its investors, customers and the environment.

NOTE

It is important that businesses decrease or eliminate the harmful impact on the environment made by chemicals, harmful materials and waste that is a result of their manufacturing processes.

A common example of a sustainable business initiative is the aim to become paperless. Another sustainable business practice is to review processes with the goal to recycle or eliminate waste. The use of non-renewable resources, such as coal and oil for generating energy, should also be minimised and be replaced by alternative renewable resources such as bio-fuel and wind energy (this also helps in "reducing the carbon footprint"). Other "green" initiatives can include saving materials through remanufacturing or converting harmful gases into clean energy and improving fuel economy.

Businesses should always consider the potential environmental impacts of their products and the processes used to manufacture it to ensure the sustainability of the business.

5 Corporate governance and sustainability

A concept that is closely related to sustainability is that of corporate governance. Before illustrating selected developments relevant to sustainability and corporate governance, the term corporate governance needs to be defined:

CORPORATE GOVERNANCE

Corporate governance is a set of processes, customs, policies, laws and institutions affecting the way that a business is managed. It also includes the relationships among the many stakeholders involved and the goals of the business.

In South Africa, corporate governance is guided by the King III report and Code. Although it addresses companies, the spirit of it should be adhered to by all businesses. Application of the King III report and Code may be mandated by law or regulation, such as by the Listing Requirements of the JSE.

A *recommendation* of the King III report is that the statutory financial information and sustainability information be combined in an "Integrated Report" to be prepared annually by all South African companies. The guidelines for the Integrated Report, as recommended by King III, are presented in the Framework for Integrated Reporting and the Integrated Report Discussion Paper (IRC SA, 2011).

This Integrated Report should:

- have sufficient information to record how the company has affected the economic life of the community in which it operated, both positively and negatively
- include forward-looking information on how it can improve the positive effects and reverse the negative effects

Companies are therefore required to report to stakeholders on the strategies and actions – and how the company plans to add value for all stakeholders. The King Report requires that companies apply a stakeholder-inclusive approach to corporate governance. *Companies should communicate effectively with their stakeholders and take their aims and concerns*

into account in its decision-making. This will lead to effective stakeholder relationships that are regarded as essential to the process of integrated reporting.

A shift in focus from the historical primary objective of maximising the value of owners/ investors is therefore required towards sustainability and the inclusion of all stakeholders in order to create sustainable wealth.

It is the viewpoint of the International Federation of Accountants (IFAC) that "sustainable development and the sustainability of organisations have become mainstream issues for politicians, consumers and business leaders".

Sustainability issues are forcing businesses to change the way they think. Long-term sustainable value creation requires that businesses direct their strategies and operations towards the achievement of sustainable environmental, economic and social performance and incorporating wider stakeholder issues and perspectives into their decision-making.

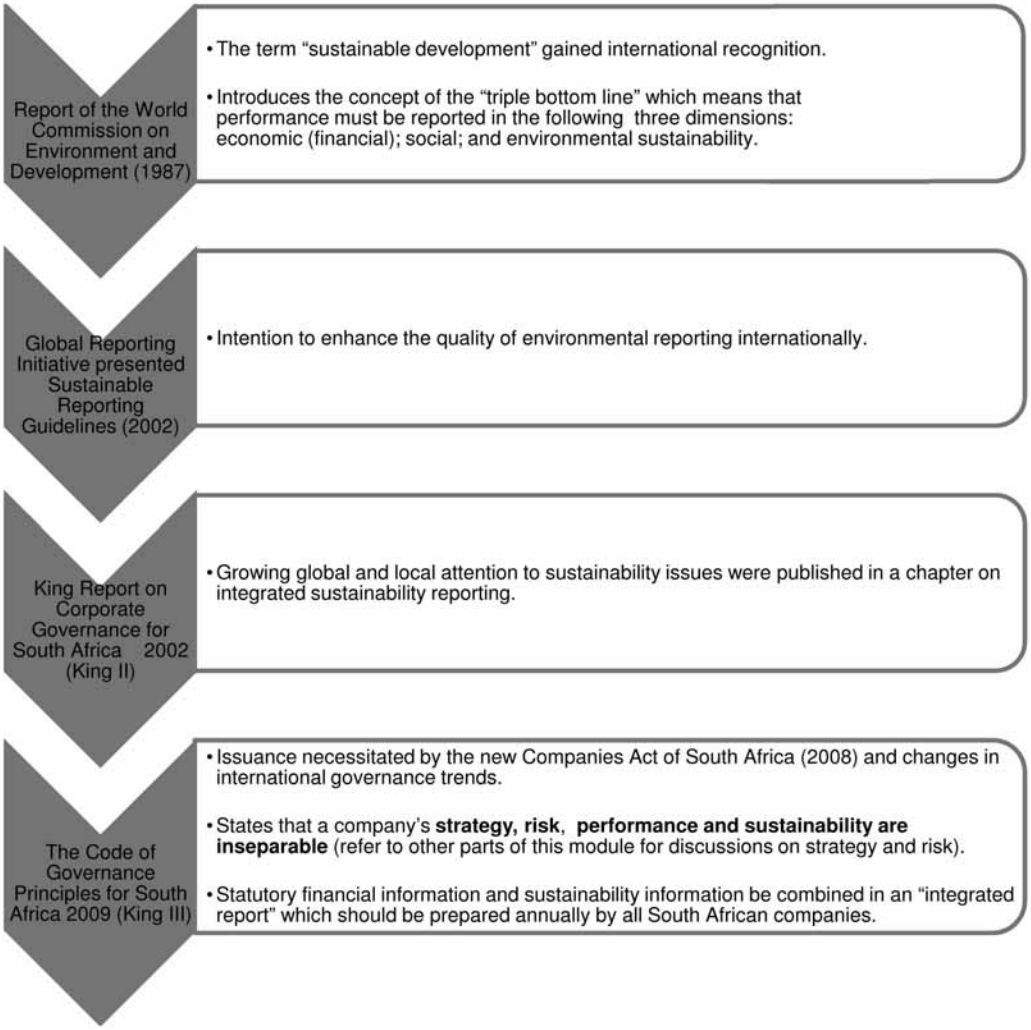
Sustainability issues are usually reported in terms of the following guidelines:

- Global Reporting Initiative Third Generation (GRI G3)
- United Nations Principles for Responsible Investment
- Equator Principles (for the financial industry)

The JSE also launched an index for companies complying with criteria set to measure their socially responsible behaviour. Companies that pass the criteria requirements are listed in the JSE's Socially Responsible Investment (SRI) index. Investors that wish to invest in companies that demonstrate good socially responsible behaviour, can invest in companies listed in this index.

In addition, the Code for Responsible Investing in South Africa (CRISA) sets out principles that encourages institutional investors (such as pension funds) to fulfil their executive investments analysis/activities in line with promoting sound governance and ensuring responsible investing.

You will learn more about corporate governance in your Auditing modules. The next figure illustrates the historical development of sustainability and corporate governance.



Source: Author, 2012

FIGURE 5.3: Selected developments in sustainability and corporate governance

Activity 5.4

Describe in your own words how "sustainable long-term wealth creation" and "corporate governance and sustainability" can contribute to the overall objective of a business, namely long-term owner/investor value maximisation.

Feedback on activity 5.4

Refer to sections 4 and 5 on "sustainable long-term wealth creation" and "corporate governance and sustainability" and explain in your own words.

You should:

- describe the concepts sustainability and corporate governance
- conclude with the argument that if all stakeholders benefit, the value of the business will be maximised and sustainable wealth creation for all stakeholders will be achieved

6 Globalisation and shareholder activism

Globalisation:

Globalisation and advances in technology have hugely changed the competitive environment in which businesses operate. The competitive environment currently includes multinational companies such as “Wal-Mart” which may be more profitable to invest in rather than local South African companies such as “Massmart” (trading under various store names including Game, Makro and Builders Warehouse). The internet and multinational companies have opened up the choices of investors and customers. This led to greater competition for services and products as well as international competition for the money that potential shareholders are planning to invest.

Nowadays, shareholders have access to information regarding the returns that overseas companies deliver. They can sell the shares they have in low return companies and put their investment in companies that deliver a higher return because of the improved information and a greater choice of companies internationally. Companies should therefore offer competitive rates of return in order to attract shareholder investment and demonstrate that they can create sustainable wealth for investors.

NOTE

You will learn more about measuring the returns for shareholders/investors later on in this module.

Shareholder activism:

In the past, shareholders tended to passively accept the profits and dividends that the company paid. Over time, this has changed due to shareholder activism. Majority shareholders have become more assertive and they require that their needs be given priority, otherwise they can sell their shares and invest in another company which regards their needs as a priority.

Activity 5.5

As financial manager, would you approve the following decisions?

- Pay workers only the minimum wage required by law.
- Pump untreated wastewater into the nearby river.
- Approve salary increases for managers whilst other employees receive none.
- Allow untreated toxic gases to be pumped into the air.
- Save cost by cutting spending on safety equipment.

Feedback on activity 5.5

No, you should not. Motivate by referring to the definition of sustainability.

7 Other financial (profit-based) and non-financial (value-based) performance measures

We already discussed the past practice of only using profit maximisation, a short-term measure as the overall objective of companies – and it was found to have drawbacks. A mixture of (financial) profit-based and (non-financial) value-based measures will therefore be more appropriate.

The *Integrated Report* requires that these non-financial measures also be communicated to stakeholders. Examples are injury-free working hours, demographics of the workforce, and so on. The Integrated Report of Gold Fields (December 2010:142), for instance, has a section "Managing our people effectively and respectfully". In this section, they provide useful statistics regarding their human resources, including the percentage of historically disadvantaged employees in South Africa, average training hours per employee, employee turnover, the minimum wage ratio and the ratio of basic salary of men to women.

A tool that can be used to overcome the shortcomings of profit-based measures is "*value-based management*" (VBM). This is an approach whereby an organisation aligns the control of the business with the interests of the owners/investors, while also taking care of the effect on the other stakeholders. It involves managing all the aspects of the business in such a way as to create and maximise the long-term sustainable value of owners/investors.

Another handy tool, which you may have encountered in previous topics, is the *balanced scorecard*. It reports performance measures across four dimensions:

- financial
- customer
- internal business processes
- learning and growth

NOTE

You will learn more about non-financial performance measurement in later MAC modules.

8 Summary

In this study unit, we discussed the overall objectives of businesses with a profit motive and explained that short-term profit maximisation was traditionally regarded as the overall objective. The drawbacks of conventional profit-based measures were then discussed.

The shift towards long-term shareholder value maximisation and the more recent focus on sustainable wealth creation were explained by pointing out that a balance needs to be found between the conflicting needs of all the stakeholders in order for sustainable (long-term maintainable) wealth to be created. The concepts of sustainability and corporate governance were explained, as well as how they relate to financial management and the overall objective of a profit-seeking business. We concluded this study unit with a short description of other financial and non-financial performance measures to illustrate how all stakeholders' demands can be addressed.

The next study unit will provide an overview of the function of financial management to serve as a basis for the remainder of the study guide.

Self-assessment activity

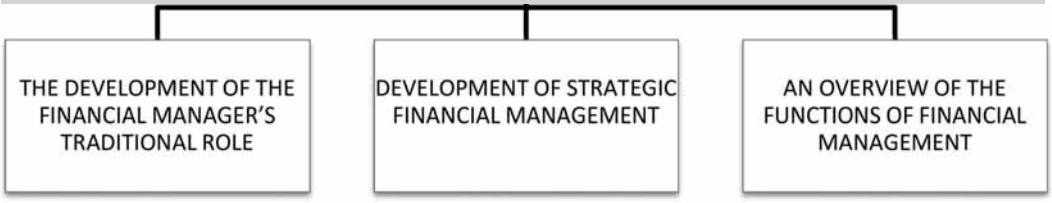
After having worked through the study unit, determine if you are able to answer the following questions:

a. Name the traditional historical overall objective of a business.
b. Explain why profit maximisation should not be the only overall objective for a business.
c. Give reasons why the overall objectives of organisations should include objectives relating to sustainable wealth creation.

STUDY UNIT 6

An overview of financial management functions

In this study unit



1 Introduction

In the previous study unit, we discussed the development in the overall objectives of businesses, which has developed from short-term profit maximisation to long-term owner/ investor value maximisation, including sustainable long-term wealth creation and other financial and non-financial objectives.

In this study unit, we will firstly discuss the development of the financial manager's traditional role. Then we will discuss the development of strategic financial management as well as the change in focus thereof. Lastly, we will present an overview of the functions of financial management.

2 The development of the financial manager's traditional role

Initially financial management entailed the making of observations from historical financial data supplied in the financial statements and a description of these observations. Financial management was regarded an outcome of accounting and lacked a clear theoretical framework. As financial management developed as a discipline, economic theories influenced it and it became more analytical.

The efficient allocation of scarce resources is one of the most important economic theories that influenced the development of financial management. The theory of efficient allocation of scarce resources was applied to practical business situations and this lead to the development of decision-making tools for management. The scarce resource in this case is the savings (or funds) of individuals and organisations. The decision-making tools that were developed took into account the effect of time as well as the risks inherent to financial decision-making.

The link that financial management has with accounting is the financial statements that supply historical accounting information. Investors use this accounting information together with other information to place a value on a business. Accounting information, however, has shortcomings because it does not fully reflect the economic reality. This is because

accounting practices were developed as a reporting mechanism. Management has to give account to the owners of the business regarding what they have done with the business' funds during the last reporting period (agency theory – more on this later). Financial managers will therefore analyse and interpret accounting data with a view towards the future so that it is useful for financial management decisions.

Traditional financial management therefore needs to be defined:

TRADITIONAL FINANCIAL MANAGEMENT

Traditional financial management is the management and control of money and money-related operations within a business. Financial management therefore includes planning, organising and controlling the financial activities of a business. The financial activities include the acquiring of funds as well as the use of these funds by applying general management principles.

As indicated in the above definition, traditionally, the primary focus of financial management was ONLY on financing decisions and investment decisions.

Source: Correia, 2011, adapted

FIGURE 6.1: The traditional role of the financial manager with regard to investment and financing decisions

3 Development of strategic financial management

Recent and current research has however indicated that the function of financial management is transforming and evolving to a broader business-partnering role, which includes the following decision-support functions:

- direct involvement in the development and implementation of strategy
- managing business risk
- managing business performance

NOTE

These roles are discussed in more detail in other parts of this module at an introductory level and will be expanded upon in later MAC modules.

Due to the shift in focus in financial management, the activities of financial managers have transformed from scorekeepers, sketched in figure 6.1 above, to business partners who contribute to business performance.

Strategic management decisions require an input from the finance function, especially with regard to financial planning issues, investment appraisal and financial market operations. The main focus of the financial manager is to contribute with his/her financial knowledge and skills towards the long-term creation of sustainable wealth for the owners/investors of the business.

Strategic financial management can therefore be defined as:

STRATEGIC FINANCIAL MANAGEMENT

"The identification of possible strategies capable of maximising an organisation's net present value, the allocation of scarce capital resources among the competing opportunities and the implementation and monitoring of the chosen strategy so as to achieve stated objectives" (CIMA Official Terminology, 2005).

Activity 6.1

Do you regard the following statement as confirmation that the focus of financial management has changed?

Financial managers should be able to perform activities to support and drive the development of sustainable organisational success. Their roles should include: being creators, enablers, preservers and reporters of sustainable value.

Feedback on activity 6.1

Yes, refer to section 3.

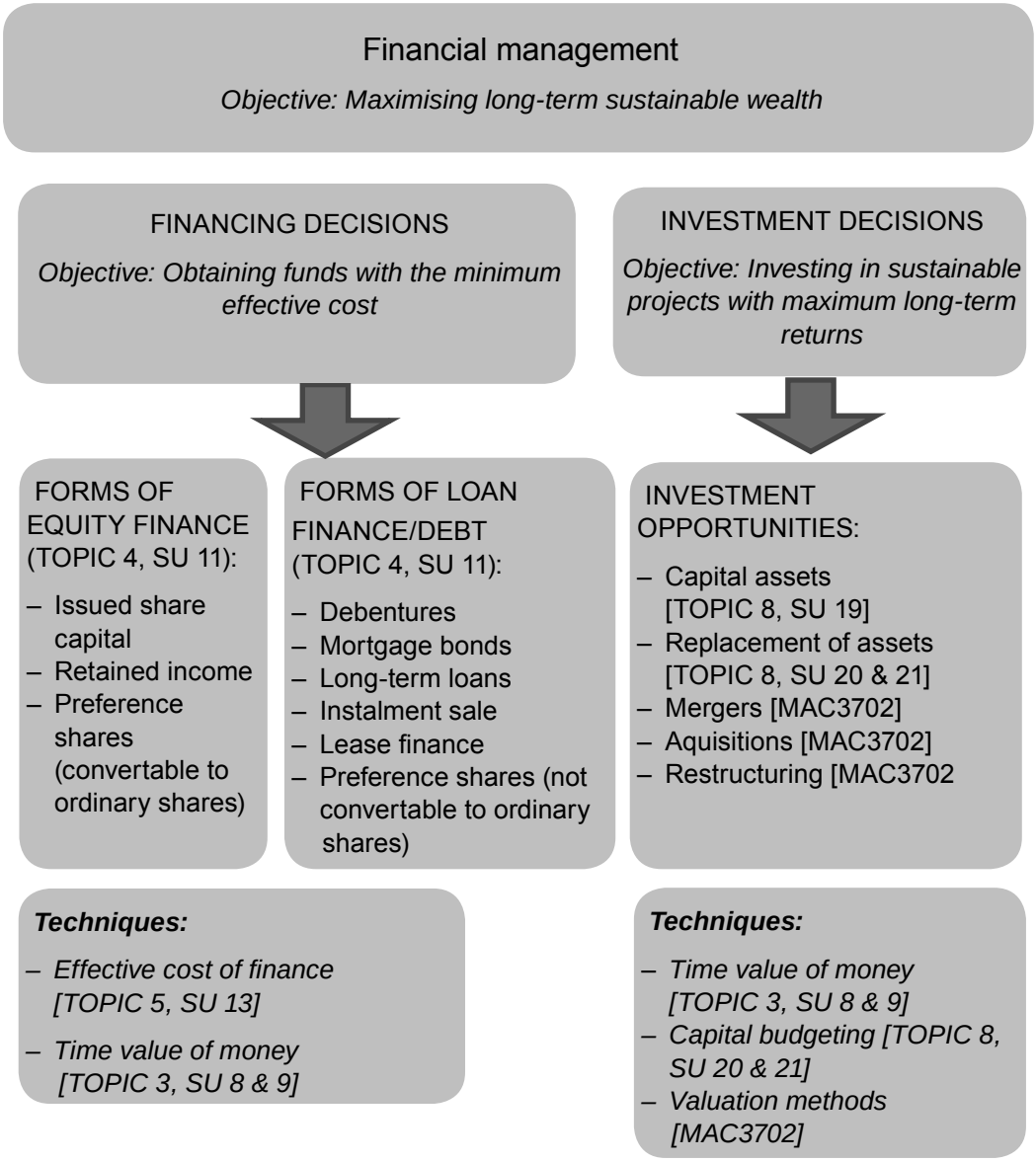
4 An overview of the functions of financial management

Organisations (profit-seeking and otherwise) generally have finance departments that are responsible for the financial management functions. The head of the finance department is usually the financial director or chief financial officer (CFO). The term financial management refers to the responsibilities of the CFO. These activities include borrowing money, purchasing assets, selling shares, paying dividends, keeping accounting records as well as other activities. This is the reason why the accounting function is usually located within the finance department of a company.

After having discussed the role of the financial manager, it is important to give you an overview of financial management topics and how it will be presented in the rest of this module.

NOTE

You should take note that this module only deals with financial management techniques at an introductory level. The financial management knowledge and insight gained through the content of this module will in other words form the foundation for more advanced applications in the third-year MAC3702 module.



Source: Vigario, 2012, adapted

FIGURE 6.2: An overview of financial management

5 Summary

In this study unit, we discussed the development of financial management from making observations based on historical data to the traditional function of analysing and interpreting data to form the basis for financing and investment decisions.

We explained that the financial management function has been evolving to a broader business-partnering role that includes decision support. As a result, the financial management function is extending to include direct involvement in the formulation and implementation of strategy, managing business risk as well as business performance.

In the next study unit, we will discuss factors that play a role in deciding on the legal form of the business and how to structure the organisation.

Self-assessment activity

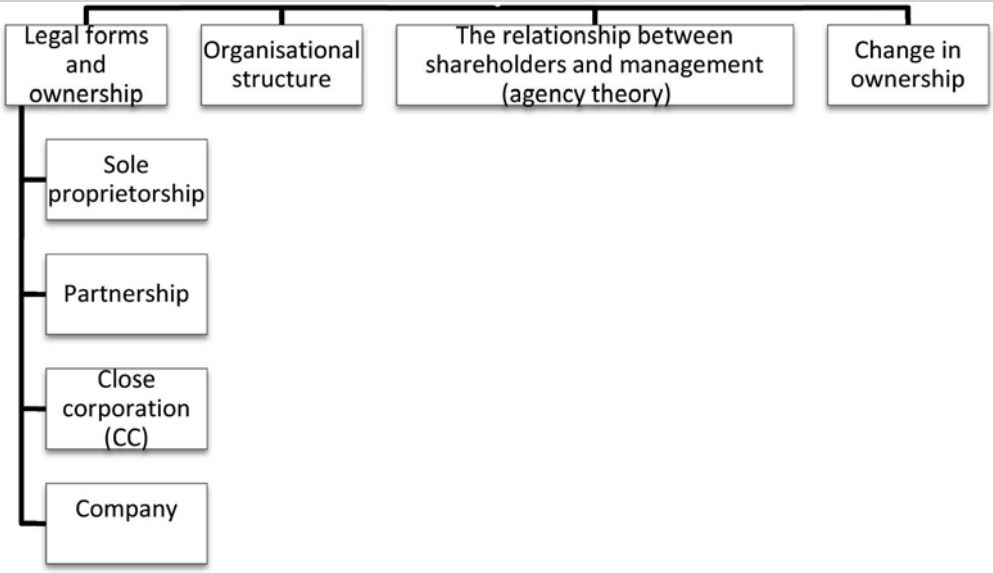
After having worked through the study unit, determine if you are able to answer the following questions:

a. Define financial management.
b. Name one discipline from which financial management has derived theories.
c. Name one theory that was adapted from another discipline.
d. Name two aspects that the decision-making tools of financial management take into account.
e. Describe the traditional responsibilities of financial management.
f. Describe what the broader business-partnering role of financial management entails.
g. What kind of inputs does strategic management decisions require from the finance function?

STUDY UNIT 7

Legal forms and structures of businesses

In this study unit



1 Introduction

In the previous study unit, we discussed the major areas of responsibilities of the financial manager on a day-to-day basis. Another task that the financial manager or practicing accountant performs on an ad hoc basis is to provide advice on the most appropriate legal form that a new business should take. We will now discuss different legal forms of businesses and forms of ownership.

2 Legal forms and ownership

It is important to classify businesses in terms of the form of ownership, because the form of ownership has many legal and tax implications that will have an influence on financial management decisions. We will therefore explain the most common forms of ownership from the form that is least regulated to the form that is most regulated. (We will only focus on those organisations that pursue profit.)

In South Africa, businesses can take one of the following legal forms:

- sole proprietorship
- partnership
- close corporation (CC) *(no new CC's can be formed)*
- various classes of companies

We will now discuss each briefly as you might already have encountered this in your supporting courses.

2.1 Sole proprietorship

SOLE PROPRIETORSHIP

Sole proprietorship is where a business is formed by a single individual who is the owner of that organisation. It is unincorporated, meaning the owner and the business is treated as the same legal persona.

- This is the least regulated and easiest type of business to start. Any person who conducts legal business activities can establish himself/herself as a sole proprietor by getting a trading licence and opening the doors of the business.
- The profit of the business is regarded as that of the owner. No legal distinction exists between the personal income of the owner and the income he/she derives from the profit of the business. The owner will therefore have to pay tax on this income (taxable profit of the organisation and any other personal income earned) according to personal income tax scales (for individuals) that are based on a sliding scale for different income brackets. The principle of sliding scales is that the more you earn, the higher the tax rate. Personal tax rates range from approximately 18% to 40%. (Take note that the South African Revenue Services (SARS) may change these scales every year in the annual budget.)
- A sole proprietor as a business form has unlimited liability. This means that according to law (legally), the owner is personally responsible for all the debts incurred by his/her business. Due to the unlimited nature of the liability, creditors can have access to the owners' personal assets for the payment of debts of the organisation. The owner's personal estate may be declared insolvent where the organisation fails and the debts exceed the assets.
- The main disadvantage of a sole proprietorship is that the organisation ceases to exist when the owner dies. The continued existence of the organisation is therefore restricted to the lifespan of the owner.
- A second disadvantage is that individuals usually have limited funds available. If the owner cannot obtain further finance to fund business activities and expansion, the organisation's operation and growth can be negatively affected.
- Selling the business might be difficult if there is no willing buyer.

2.2 Partnership

PARTNERSHIP

Partnership is where a business is formed by between two (2) and 20 individuals or organisations. It is unincorporated. Partners are severally and jointly responsible for all the debts of the partnership.

- When two or more persons or organisations (limited to 20) come together to start a business, a partnership can be formed.
- A partnership agreement, which can be an informal oral agreement or a written agreement, will set out how the partners will divide the profits and losses.
- The formation of a partnership is easy and inexpensive because no specific act or law regulates it.
- As with a sole proprietorship, the profit-share of each partner will be taxed in the hands of the partner, at tax rates ranging between 18% and 40%, depending on the total personal income of that partner.

- A partnership has unlimited liability, which means that partners are jointly and individually responsible for the debts of the partnership. In effect, each individual partner is responsible for the actions and debts incurred for the business by all the other partners.
- The disadvantages of partnerships as a legal form of business are the same as that of a sole proprietorship. A partnership also ceases to exist when a partner wishes to sell or dies. As with a sole proprietorship, the continued existence of a partnership can also be limited.
- Ownership by a partner is not easily transferable because a new partnership must be formed when a partner wants to exit the partnership.
- In a partnership, the funds available for the activities of the business are limited to the combined funding of the partners.
- However, a partnership has the advantage of combining the resources (financial, technical skills and management expertise) of all the individual partners.

It is not unusual for a business to start as a sole proprietorship or partnership and then change to a corporate form at some point when it needs to raise more cash in order to grow. Apple Computer is an example of such a company that started as a sole proprietorship and after several years changed to become a company.

Activity 7.1

Can you identify four disadvantages of sole proprietorships and partnerships as legal forms of business? To what single central problem do you think these will add up to?

Feedback on activity 7.1

i. The organisation has a limited life.
ii. There may be difficulty in transferring ownership.
iii. The funds that can be raised are limited to the funding of the owner(s).
iv. Owners have unlimited liability for business debts.

These disadvantages will make it difficult for the organisation to raise additional funds, which could seriously limit the growth of the organisation.

2.3 Close corporation (CC)

CLOSE CORPORATION

A close corporation (CC) is a business that is formed as a legal person that exists separate from its owners. A maximum of ten owners, called members, which must be natural persons, are allowed.

It is important to note that the Companies Act, Act 71 of 2008, that came into operation on 1 May 2011, **prohibits the registering of NEW CCs**. Existing CCs can continue to exist and can convert into companies by following a relatively simple procedure.

Close corporations as a legal organisation *eventually will disappear* as they convert into private companies (discussed after this). However, since not all existing CCs will convert

to companies after 1 May 2011, they will still be part of the business environment for some time to come. We therefore provide information on this business form.

The Close Corporation Act 69 of 1984 governs close corporations as a form of business and sets out formalities such as registration of a founding statement at the Companies and Intellectual Property Registration Office of South Africa (CIPRO). On 1 May 2011 CIPRO was replaced by the Companies and Intellectual Property Commission (CIPC).

- The close corporation as a legal form of business has been introduced in South Africa to provide a less expensive and simpler legal form for the entrepreneur or a few participants.
- It retains the concept of limited liability enjoyed by companies.
- It also retains the concept of continuity of ownership enjoyed by companies.
- The close corporation also has to produce financial statements, but it has not been required that these be audited. In terms of the new Companies Act, a close corporation may now also be required to be audited if it falls within the category of regulations passed by the minister, stipulating the organisations requiring an audit.
- The investment by the member/s in the close corporation is known as the "member's contribution/s" or "member's interest", which may be transferred to a new member if the other members are willing to allow it. This ensures the continued existence of the organisation.
- Close corporations are similar to partnerships in that the owners are also often the managers of the organisation and have a proportional interest in the organisation. However, a close corporation differs from a partnership in that the close corporation does not cease to exist when a member sells his/her interest.
- According to the Income Tax Act, the close corporation is taxed as an organisation apart from the members at the same tax rate as companies.
- Similar to a company, members enjoy limited liability unless it can be proven that they acted fraudulently or recklessly. The abbreviation "CC" has to appear at the end of the name of the organisation.
- This limited liability, as opposed to the joint and individual liability as in partnerships, removed the exposure to personal liability for debts of the organisation in the case of failure of the organisation.

The advantages regarding close corporations explain why close corporations as a business form were so attractive for small business enterprises.

Activity 7.2

How would you explain the attractiveness that a close corporation as a business form had for small business enterprises in the past (before 1 May 2011)?

Feedback on activity 7.2

Before 1 May 2011, the close corporation provided a relatively inexpensive and simple legal form of business for the entrepreneur or a few participants, while at the same time offering the benefits of limited liability and continuity of ownership. The limited liability of the members, the unlimited life of the business and the fact that ownership could be transferred if the members permitted it, addressed the needs of the entrepreneur, or a small number of participants.

2.4 Company

COMPANY

A company is a business form that is a legal organisation distinct from its "owners". "Owners" are referred to as shareholders and can be one or more individuals or organisations.

According to the Companies Act – Act 71 of 2008 – that came into operation on 1 May 2011, all companies fall into one of two broad categories, namely profit companies and non-profit companies (NPCs).

2.4.1 Non-profit companies

- It must have an objective to further some "public benefit" or relating to one or more cultural or social activities, or communal or group activities.
- It must be incorporated by three or more persons.
- All the income and assets must be utilised for the determined objective and no income or assets of the company may be transferred to its directors, members, officers or incorporators. These parties may, however, be paid a reasonable remuneration for their services.

2.4.2 Profit companies

These are companies that are incorporated for the purpose of financial gain for its shareholders. Profit companies are further subdivided into five types:

- private company (Pty) Ltd
- public company (Ltd)
- state-owned company (SOC)
- external company (foreign companies, incorporated outside the Republic of South Africa)
- personal liability company (Inc)

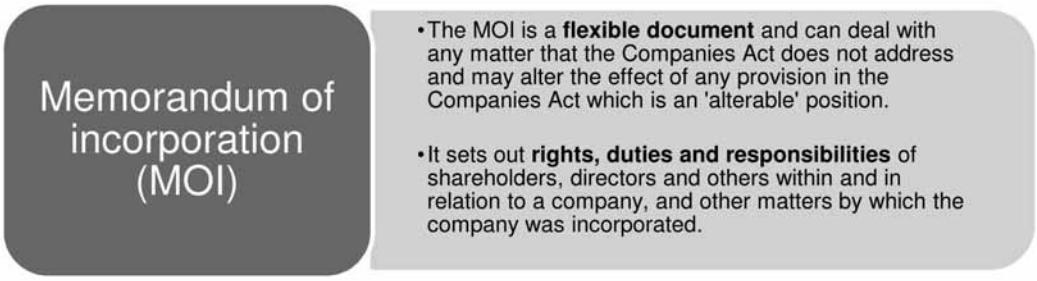
Because the formation of and activities of a company are regulated by the Companies Act, it is **much more complicated and expensive** to form a company than any other form of business. The registration of a company (incorporation) must be made at the Companies and Intellectual Property Commission (CIPC).

NOTE

CIPC replaced the Companies and Intellectual Property Registration Office (CIPRO) on 1 May 2011. The new commission will act independently with a focus on the registration of companies and intellectual property.

A company is incorporated by the lodging of the following main forms:

- Notice of Incorporation
- Memorandum of Incorporation (MOI)



Source: Author, 2012

FIGURE 7.1: Information contained in the memorandum of incorporation

Unlike sole proprietorships and partnerships, a company is a **legal organisation**, or legal "person" that is **separate from the "owners"**. Despite the fact that it is more expensive to form and maintain a company legally, the advantage of it being a legal organisation separate from the owners, make this very suitable for larger enterprises.

We will now focus on some of the characteristics of the first two types of profit companies, namely private and public companies.

Note that in your Auditing modules you will learn about the Companies Act in much more detail.

Characteristics of a PRIVATE company	Characteristics of a PUBLIC company
• They are now subject to **fewer disclosure and transparency** requirements than before. (Old Companies Act of 1973) • A private company is **prohibited from offering its shares to the public** and the transferability of its shares are restricted. • It **may have more than 50 shareholders.** • The name of a private company must end with the expression "Proprietary Limited" or its abbreviation **"(Pty) Ltd"**. • The board of a private company must **comprise at least one director,** or any other minimum number as stipulated in its MOI. Each incorporator is a first director of the company.	• Their MOI permits them to **offer shares to the public** but restricts, limits or negates their right of pre-emption (first right). • The name of a public company must end with the word "Limited" or its abbreviation, **"Ltd"**. • A public company must have **at least three directors.**

Source: CIPC, 2012 (adapted http://www.cipc.co.za/Companies_Reg.aspx)

FIGURE 7.2: Characteristics of private and public companies

- The limited liability means that a company can buy, sell and do transactions in its own name like any other actual person. Since it has many of the constitutional rights and duties of an actual person, a company can own property, enter into contracts, borrow money, be a partner in a partnership – and even own shares in another company.
- Should the company fail the creditors bear the risk of not being paid because they do not have access to the personal assets of shareholders. This fact will encourage investment, since shareholders have the advantage of unlimited gains but losses are limited to the amount they have invested in the company. You should note that where a company borrows money, the company has to provide sufficient surety for the loan. If the company has sufficient surety, as would have to be the case in a public company, the shareholders would have limited responsibility for the company debt – they can only lose what they have invested in buying the shares.
- In private companies, the lender would often require the shareholders, who are often also involved in management, not just to provide company assets as surety, but also to sign personal surety for the loan. The shareholder would then be at risk to whatever the amount of surety signed, not just the money invested in the shares of the company.
- When compared with other forms of organisations, at first glance, companies appear to be the better form to raise cash mainly because of the limited liability of the shareholders, the unlimited life of the organisation and the relative ease with which ownership can be transferred. However, the type of company would affect this viewpoint.
- The company is a separate tax organisation. The liability for taxation by companies is based on the taxable income. This is calculated by taking taxable revenue and deducting allowable expenses according to current tax legislation. The corporate tax rate in South Africa for 2012 was 28%, but it may change from year to year. Other taxes in addition to or in the place of corporate tax as well as specific deductions apply in certain circumstances. These taxes fall outside the scope of this module, but you should note that these taxes may have the effect that a much higher or lower effective tax rate is paid by companies than the 28% mentioned. Due to the competitive environment in which countries compete for investments globally, some countries may lower company tax rates to attract investment. Other countries may allow certain tax deductions to encourage certain behaviour, for example, deductions may be allowed to encourage investments in operating assets, or plant and equipment, or for research and development expenses.

Activity 7.3

Partners in a partnership are busy considering whether they should rather trade as a company. Name the advantages that should be taken into account when evaluating the option to change the form of the organisation to a company (change the form of ownership).

Feedback on activity 7.3

Advantages of trading as a company (private or public):

- There is an improved access to equity and debt capital in order to stimulate growth.
- The limited liability of the shareholders ensures that shareholders are not responsible for the debts of the company (in case of public companies).
- The unlimited life of the company ensures that investors can keep their shares as a long-term investment.

- In a public company, the relative ease with which ownership can be transferred will provide better liquidity to investors (in case of companies listed on the JSE).
- If the partners are paying tax on their partnership income at 40% and the expectation is there that the company would effectively pay the corporate rate of 28%, trading as a company could have tax advantages.

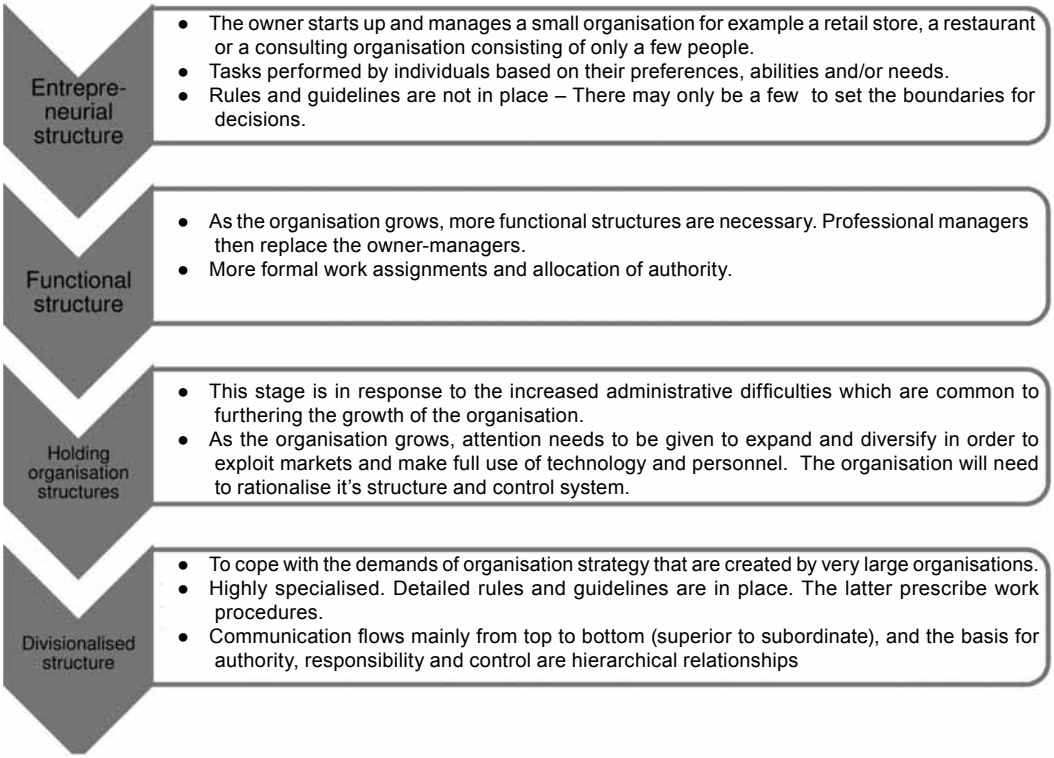
3 Organisational structure

Once the initial legal form of the business has been decided on, the financial manager should also provide advice on the suitable organisational structure of the business.

ORGANISATIONAL STRUCTURE

The structure of a business can be defined as organisational arrangements, systems for gathering together human, physical, financial, and information resources at all levels of the system.

The structure of a business is closely linked to the implementation of the business' strategy and growth over time. Research has established that an organisation's structure usually evolves through four stages, which are normal growth processes, illustrated in the following figure:

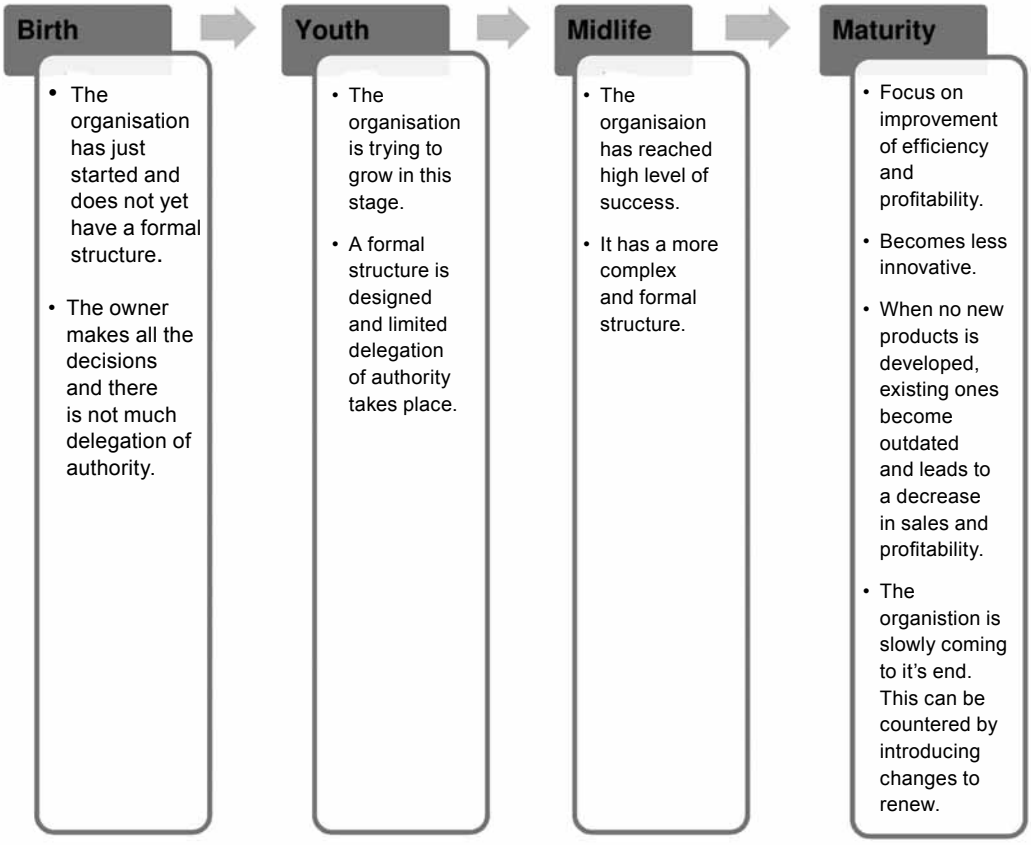


Source: Woodward (1980), adapted by author

FIGURE 7.3: Four stages of growth in the structure of an organisation

From figure 7.3, it is clear that the stages through which an organisation's structure changes are normal and are directly related to the growth of a business. These changes in structure must in turn be accommodated by adjustments in the strategy and even changes in the legal form of the organisation. For example, a sole proprietorship might change to a small private company and if the business is really successful, it might change to a public company with shares being offered to the public and a listing on JSE Limited.

Just like humans, organisations have the tendency to move through stages also known as its life-cycle. Each of the stages has characteristics that affect the structure of the organisation. The stages are birth, youth, midlife, and maturity as illustrated in figure 7.4 below.



Source: Author, 2012

FIGURE 7.4: Life-cycle of the organisation

An organisation does not have to proceed through all four stages in sequence. It may pass over a phase, or it may revert back to a previous phase. It can also try to alter its position in the life-cycle by means of changing its structure. Part of the organisation's strategy should be to continually investigate and capitalise on opportunities to regenerate products and processes.

The implication of the life-cycle concept is that there is a relationship between the size and age of an organisation. As organisations grow older, they tend to become bigger. Therefore, the structural changes that an organisation goes through as it gets larger and the changes it goes through as it moves through the life-cycle, are corresponding. It is clear that, the older and bigger the organisation gets, the more a need develops for more structure, more specialisation of jobs, and more systems. The result will be a move from an informal (organic) structure to a highly formal (mechanistic) structure.

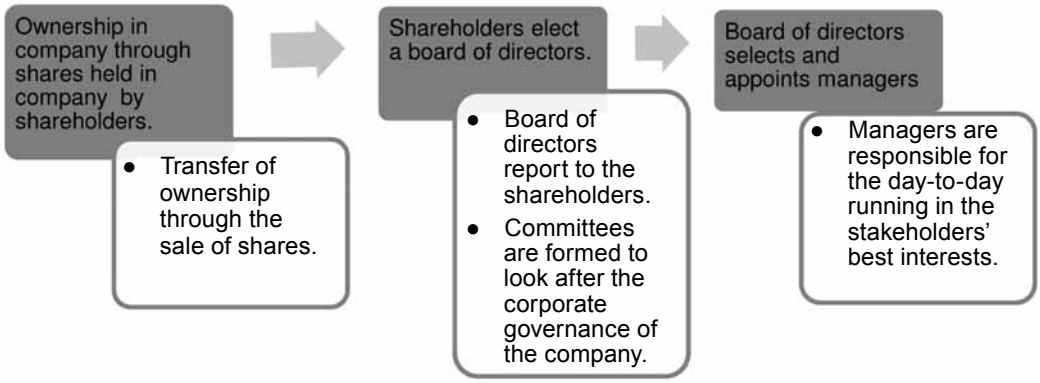
Organisational structuring is an ongoing process. A simple structure is generally needed for simple strategies while complex structures are necessary when organisation strategies involve complicated interactions.

In MAC3701 you will learn more about exercising control in centralised versus decentralised (divisionalised) organisations and related performance measures.

4 The relationship between shareholders and management (agency theory)

An important aspect to bear in mind when selecting a company as legal form for the business is the relationship between the shareholders (owners) of the company and the managers of the company which the shareholders appoint to run the company on a day-to-day basis.

The following figure summarises the theoretical relationship between the various parties in a company. While the structures would certainly apply in public companies, in many private companies, some of these relationships may be combined, for example, a majority shareholder would quite likely be a director – and may also be a manager.



Source: Author, 2012

FIGURE 7.5: Summary of relationships between parties in a company

As illustrated in figure 7.5, ownership is separated from the day-to-day running of a public company. This is called "separation of ownership and control". In private companies, the size of the company would determine whether this would apply or not.

The managers are supposed to manage the company in the best interests of the shareholders. Therefore, they are seen as agents for the shareholders. The risk exists that the goals of managers may be different from those of the shareholders. An example of where management are motivated by self-interest instead of promoting the best interest of the shareholders is when managers structure very large salary packages for themselves or incur expensive travel for so-called "business" trips that were actually private holiday trips.

Conflict can therefore develop between the self-interest of the agents (managers) and their task to maximise long-term wealth for the shareholders (owners). This conflict is known as **"agency theory"**. Because shareholders only have periodical chances to determine whether the managers run the organisation in their best interest, shareholders can discourage managers from pursuing their own interests by developing suitable incentives for managers such as performance bonuses – and use this to monitor their behaviour. You will learn more about performance management and share incentive schemes in MAC2601 and MAC3701.

5 Change in ownership

When a company wants to expand, it can be done by acquiring long-term operating assets – also called organic growth or internal expansion. Another path to follow in order to expand is by acquiring the control of shares and assets in another company. This is called a take-over or external expansion.

TAKE-OVER

Take-over is the term used when referring to the transfer of control of a company from one group of shareholders to another group of shareholders.

In the case of a take-over, the existing shareholders are entirely or largely replaced by new shareholders. The organisation who takes over obtains full control over the company's policy formulation and management. Buyouts, take-overs and restructuring are ways by which the ownership of a company can be restructured. These concepts will be discussed in detail in MAC3702.

6 Summary

In this study unit, we explained the factors to consider when deciding on the legal forms of an organisation, the structure, the relationship between shareholders and management and a change in ownership. We also discussed how the growth of the business necessitates changes in its organisational structure. Lastly, we explained the very important concept of agency theory.

Once the legal form and structure of the business has been decided upon, you need to consider how much funding is required (the size of the investment) and how it will be financed (sources of finance).

Since the objective of financing decisions is to obtain funds with the minimum cost, you will need to calculate the cost of the different financing options. In order to do this, you require knowledge of the time value of money. Similarly, when investing money, you need to know how to calculate the effective returns from the different options. In the next topic we will explain time value of money concepts and illustrate selected calculations.

Self-assessment activity

After having worked through the study unit, you should be able to answer the following questions:

a. Which is the least regulated and easiest type of business to start?
b. Describe what a sole proprietorship entails.
c. List three characteristics of non-profit companies.
d. Identify the five types of profit companies as provided for in the Companies Act of 2008.
e. List three fundamental differences between public and private companies.
f. Define the concept "business structure."
g. List the four stages of growth in the structure of an organisation.
h. Describe what "agency theory" entails.

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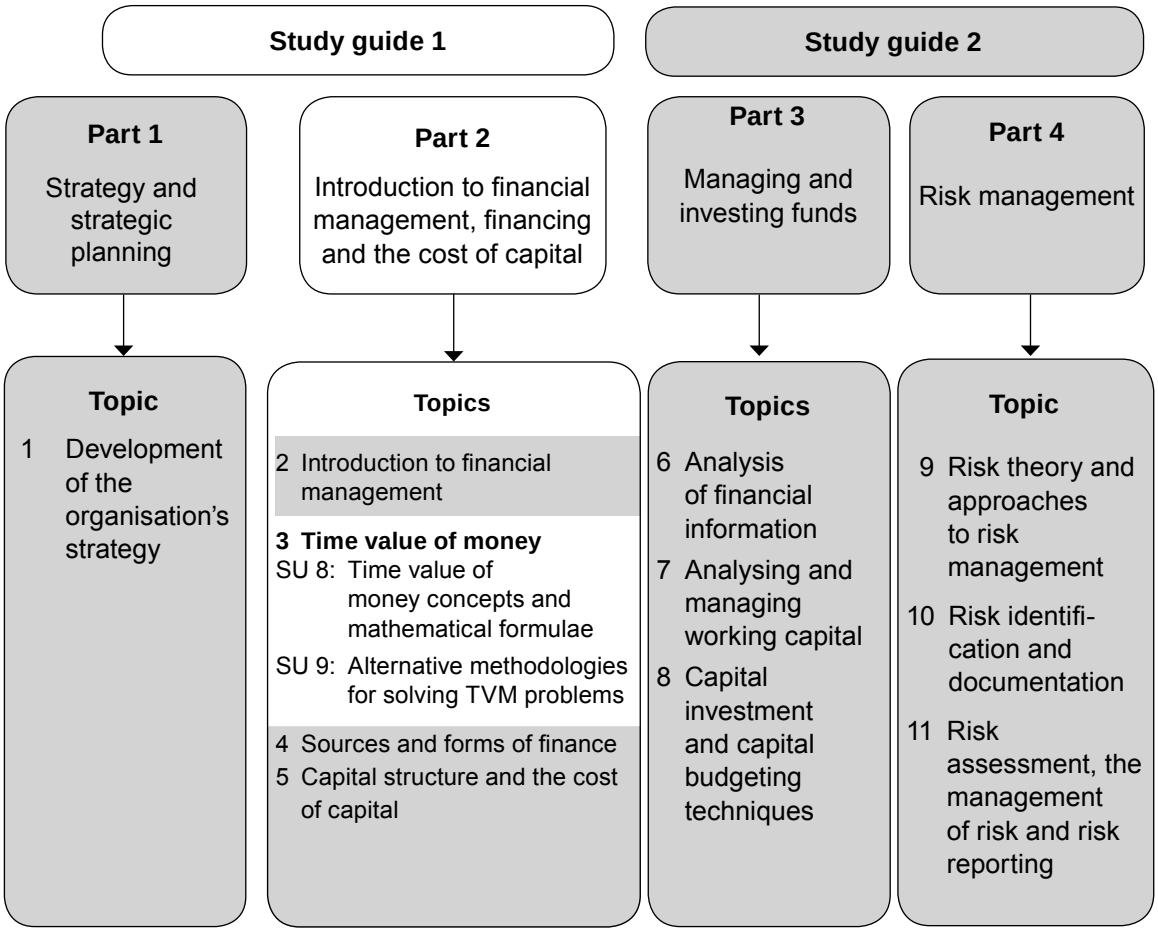
Time value of money

LEARNING OUTCOMES

After studying this topic, you should be able to:

- define the concepts related to the time value of money
- calculate the future and present value of various types of cash flows
- calculate simple and compound interest
- calculate effective annual, nominal and periodic interest rates
- use mathematical formulae, factor tables, and a financial calculator to calculate future and present values of single amounts, annuities, perpetuities and unequal payments
- determine the applicable interest rate by using interpolation



INTRODUCTION

In the previous topic we discussed the functions of financial management, including its direct involvement in the formulation and implementation of strategy, the management of business risk and business performance.

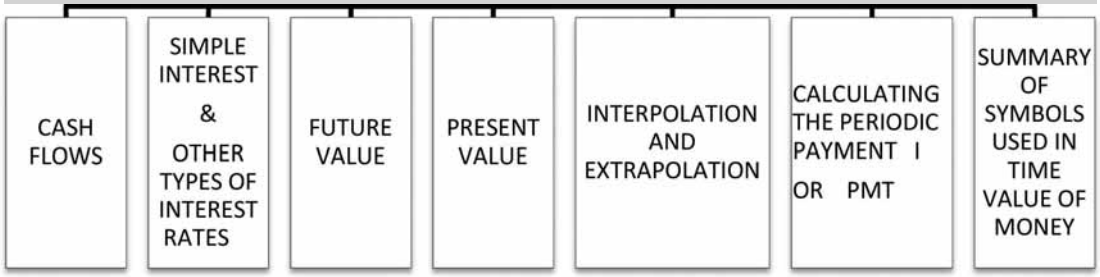
The main objectives of financing decisions are to obtain funds at the lowest cost or to invest funds at the highest return. Calculation of the effective cost of alternative financing options is necessary in order to compare options and to select the option with the lowest effective financing cost. At the other end of the scale, calculating the returns on alternative investment options is necessary in order to compare options and to select the option with the highest return.

In this topic, we will explain the concepts related to the time value of money (TVM) and illustrate selected calculations that you will need to understand and apply when you calculate the cost of capital (cost of the different sources of finance), or compare investment options and carry out free cash flow valuations. You will learn more about these topics later on in this module guide.

STUDY UNIT 8

Time value of money concepts and mathematical formulae

In this study unit



1 Introduction

We will now introduce you to the basic concepts used in time value of money (TVM). We will start by explaining the basic mathematical principles, expressed as formulae. We will demonstrate how you should apply these formulae to solve problems with the aid of your pocket calculator. Please note that you must be able to solve these problems with your pocket calculator, because this will demonstrate that you really understand the principles explained in this study unit.

The opportunity to earn a return (interest) on funds that you have invested means that a rand received today is worth more than a rand received at some date in the future. If R1 000 is received today, it can be invested and earn interest. The interest earned will result in the investment being worth more after a year than merely receiving R1 000 a year from now. This is a core principle of finance, and is called the time value of money.

The time value of money is important, because the majority of business decisions boils down to a trade-off between spending or borrowing money today and receiving or paying back money in the future. Financial managers use the time value of money principle as tool to determine how much money an organisation must earn in the future to justify today's expenditures on new investments.

NOTE

In this topic we will use the concepts *borrowed* and *invested* as well as *interest paid* and *interest (or return) earned* interchangeably. The TVM principles (mathematical calculations) apply equally, whether you are working with funds borrowed or funds invested. The amounts paid by one party are the amounts received by the other party.

2 Cash flows

CASH FLOW

Cash flow is any receipt or payment of money that occurs at a specific point in time. It includes capital and interest.

A cash flow consists of two components:

Firstly, it comprises the actual **receipt or payment** of money. This differs from the accounting concepts of "income" and "expense" These accounting concepts arise from the fundamental principle of accounting, in which accounting entries are detached from the associated cash flows and recognised in accounting periods that may differ from those in which the actual cash-flows occur (for example, the accrual of employee leave entitlement or the depreciation of equipment). The associated cash flow (in this instance the payment of accrued leave) may not occur if leave is taken in a later period; alternatively, it may be paid out in a later accounting period.

Secondly, there is a **defined point in time** at which the cash flow occurs. Because of the time laps between the receipt or payment of money and the defined future point in time, interest can be earned or should be paid. This is why it is essential to apply the time value of money.

Cash flows form the basis of time value of money calculations and are either **single cash flows, annuities** or **unequal cash flows**. The types of cash flows that we are talking about here are the actual payments made or received, either once off or periodically. The repayment of an amount owing in fixed instalments (payments) also uses the annuity formulae.

The next diagram will illustrate the various types of cash flows.

KEY TERMS:

SINGLE CASH FLOWS	**A single cash flow is a once-off (non-repetitive) cash inflow or outflow.** Examples are an initial investment or once off repayment of borrowed money.
ANNUITIES	**An annuity is a stream of equal payments at equal intervals of time in the future.** **ORDINARY ANNUITY** An ordinary annuity is an annuity where the payments take place at the end of each year or period (payment interval) at the same time that interest is calculated. **PERPETUITY** A perpetuity is an annuity where the payments continue forever. **ANNUITY DUE** An annuity where the payments fall due at the beginning of each payment interval (period) is an annuity due. The last payment of an annuity due is one payment before the end of the term. An example is the monthly rent for a house.
UNEQUAL CASH FLOWS	**Unequal cash flows can occur repetitively at the end of each year or period (payment interval).** An example is dividend payments on ordinary shares, where the dividend payout is not static.

3 Simple interest

INTEREST

Interest is the price paid for borrowed money or received for money invested.

If you borrowed R1 000 from the bank for two years, you will have to pay the bank for the use of the money. In other words, you have to compensate the bank (lender) for their being unable to use this money. The percentage agreed on between the borrower and lender is the interest rate.

In this section we will discuss the following two types of interest rates that apply in the time value of money calculations – simple interest and compound interest. Nominal and effective interest will be covered later.

SIMPLE INTEREST

Simple interest is the interest calculated on the principal only for the entire term.

Simple interest means accruing the SAME amount of interest each year based on the same PRINCIPAL amount. Interest is not earned on accrued interest.

Key terms: Principle, Duration, Interest

The amount of money originally borrowed (or invested) is called the **PRINCIPAL (P)** and the period of time for which it is borrowed (or invested) is the **DURATION (n)** of the loan (or investment). **INTEREST (i)** is calculated as a percentage of the principal per year.

For example, if the interest rate is 15%, then 15% of R1 000 = R150 interest accrues per year until the loan and interest are repaid. The value of the loan obligation at the end of two years (at a specific date in the future) will be:

Principal amount	R1 000
plus the interest for the two years (R1 000 × 0,15 × 2)	R 300
Future value	R1 300

Similar to the above example, you can make an investment and receive (accrue) interest on this investment, which is only payable when you withdraw the investment. Say you invest R6 000 at 13% simple interest for three years. The amount that you will receive at the end of the three years (the value of your investment after three years) will be:

Principal amount	R6 000
plus the interest accrued for the three years (R6 000 × 0,13 × 3)	R2 340
Future value	R8 340

These examples illustrate the calculation of the interest amount by multiplying the principal amount with the simple interest rate and the time in days, months or years.

Should you be required to determine the initial or principal amount to invest, if invested at a 13% simple interest rate, which will yield a future value (accumulated sum) of R8 340 after three years, you can change the formula as follows:

Principal amount	=	Future value – interest
P	=	R8 340 – (P × i × n)
P	=	R8 340 – (P × 0,13 × 3)
P + (P × 0,13 × 3)	=	R8 340
1,39P	=	R8 340
P	=	R8 340 ÷ 1,39
P	=	R6 000

NOTE

Interest (i) is used in its decimal format, that is, 13% is 0,13 in mathematical formulae.

However, when entering the interest rate into your financial calculator (as we will illustrate in the next study unit), it is entered as an integer or whole number, that is "13".

Activity 8.1

Your mother wants to deposit R2 000 in a bank account that earns 10% simple interest per year (annum). You are required to determine the value of your mother's investment at the end of the three-year period.

Feedback on activity 8.1

The value of the investment will be:

Principal amount	R2 000
plus the interest for the three years (R2 000 × 0,10 × 3)	R 600
	R2 600

OR

Year	Interest calculation	Interest	Balance
1	R2 000 × 0,10	R200	R2 200
2	R2 000 × 0,10	R200	R2 400
3	R2 000 × 0,10	R200	**R2 600**

From the interest column, you will see that the amount of annual interest is the same as simple interest, which is interest payable on the principal (capital portion) ONLY.

4 Compound interest (annually)

COMPOUNDING

Compounding refers to the calculation of interest on a principal (initial) amount and adding that interest to the principal for investment in the following period. The interest is therefore not paid at the end of the period in which it accrues. In the next period(s), interest is earned on the interest re-invested.

When we borrow or invest money at a compound interest rate, the interest due at the end of each year, is added to the amount of the original loan or investment (the principal amount). The following year's interest is then calculated on the new balance consisting of the principal and the interest portion that was added. It therefore refers to interest that is earned on interest or **capitalised interest**.

Money invested at compound interest increases quicker in value, which is why compound interest is preferred over simple interest. For example, repayments on loans from banks and housing bonds are usually based on compound interest. The pay-out value of savings, such as life assurance policies and pension funds, are also to some extent derived from the compound interest earned over the years.

Activity 8.2

Compound interest (single payment)

Consider the same information as for simple interest in activity 8.1, but now interest is at 10% per year compounded yearly (annually).

You are required to determine the value of your mother's investment at the end of the three-year period.

Feedback on activity 8.2

The end value of the investment of the single amount will be:

Year	Interest calculation	Interest	Balance
1	R2 000 × 0,10	R200	R2 200
2	R2 200 × 0,10	R220	R2 420
3	R2 420 × 0,10	R242	**R2 662**

The future value of the investment has grown to R2 662 (using compound interest) as opposed to only R2 600 as per activity 8.1 (using simple interest).

NOTE

From the interest column, you can see that the annual interest earned increases. Compound interest is when interest is payable on BOTH capital and accumulated interest. It assumes reinvestment of the interest receivable at the end of the year, at the same interest rate.

5 Future value

FUTURE VALUE

The future value is the amount that an investment will be worth at a future date if invested at a particular simple or compound interest rate.

In time value of money calculations, the future value is usually abbreviated as FV. The periods (n) refers to the number of times that interest is compounded.

We also refer to the future value as the maturity value or the accumulated sum of an investment after a certain number of periods.

5.1 Future value (single payment)

The mathematical formula used for calculating the future value of one payment (single cash flow) for one year or 1 period is:

FUTURE VALUE (SINGLE PAYMENT – 1 PERIOD)

$$FV = PV(1 + i)$$

The mathematical formula used for calculating the future value of one payment for multiple years or periods (using compound interest) is:

FUTURE VALUE (SINGLE PAYMENT – MULTIPLE PERIODS)

$$FV = PV(1 + i)^n$$

Where FV = Future value
PV = Present value
i = Interest rate
n = Number of years/periods

NOTE

In mathematics, the superscript n (^{n}), is the power function. It means a number must be multiplied with itself n times. For example, 2^3 is 2 × 2 × 2 = 8.

The above formula is extremely important, so please make sure that you fully understand it.

If PV is assumed to be R1, in the mathematical formula **$PV(1 + i)^n$,** the part of the mathematical formula in brackets is called the **FV factor of R1 received/paid now, after n years**. Table C, at the end of this topic, presents the future value of R1 received or paid now, after n years (a range of periods "n" and at a range of interest rates "i". In the next study unit you will see that we can replace $(1 + i)^n$ with the applicable FV factor from Table C, instead of calculating it mathematically.

One can also easily solve time value of money problems (questions) with the use of a financial calculator (as discussed in the next study unit). Although we will show the steps for the financial calculator in the next study unit, we want you to understand the concepts involved and not just read the final answer from the calculator.

Activity 8.3

Future value (single payment)

If you invest R6 000 now at 13% compound interest over a three-year period, what will the amount be that you will receive at the end of the three years? Use the mathematical formula and pocket calculator.

[Work to four decimal places and round your final answer to the nearest rand.]

Feedback on activity 8.3

FV = $PV(1 + i)^n$
= $R6\,000(1 + 0{,}13)^3$
= R6 000 × 1,4429
= R8 657,3820
= R8 657 (rounded to the nearest rand)

Year	Interest calculation	Interest	Balance
1	R6 000 × 0,13	R780	R6 780
2	R6 780 × 0,13	R881	R7 661
3	R7 661 × 0,13	R996	**R8 657**

Where $(1 + i)^n$ *= (1,13 × 1,13 × 1,13) = 1,4429*

5.2 Future value (ordinary annuity)

The mathematical formula used for calculating the future value of an ordinary annuity (using compound interest) is:

Key formula: FUTURE VALUE (ORDINARY ANNUITY)

$$FV_{annuity} = I \times \left[\frac{(1+i)^n - 1}{i}\right]$$

Where:
I = Annuity amount or payment
i = Interest rate
n = Number of years or periods

Activity 8.4

Future value (ordinary annuity)

A person would like to invest R5 000 at the **end** of **each year** at an annual compound interest rate of 14%. You are required to determine the value of the investment after four years by using a:

i. mathematical formula
ii. pocket calculator

[Work to four decimal places and round your final answer to the nearest rand.]

Feedback on activity 8.4

i. Mathematical formula:

$$FV\,annuity = I \times \left[\frac{(1+i)^n - 1}{i}\right]$$

$$= R\,5\,000 \times \left[\frac{(1+0{,}14)^4 - 1}{0{,}14}\right]$$

$$= R5\,000 \times \left[\frac{(1{,}14)^4 - 1}{0{,}14}\right]$$

$$= R5\,000 \times \left[\frac{(1{,}6890 - 1)}{0{,}14}\right]$$

$$= R5\,000 \times \left[\frac{0{,}6890}{0{,}14}\right]$$

$$= R5\,000 \times 4{,}9211$$

$$= R24\,605{,}72$$

$$= R24\,606 \quad \text{(rounded to the nearest rand)}$$

ii. Pocket calculator

Required calculator steps:	Display
Key in **1.14 2ndF y^x 4 =**	1,6890
Deduct 1	0,6890
Divide by 0,14	4,9211
Multiply with 5 000	24 605,72

NOTE

(a) You will notice from the above, that we are in effect applying the mathematical formula in the various steps; this means that the formula and pocket calculator approach are actually identical.

(b) If I is assumed to be R1, in the mathematical formula

$$I \times \left[\frac{(1+i)^n - 1}{i}\right]$$

the part of the mathematical formula in brackets is called the **FV factor of R1 received/ paid for n years at the end each year**. Table D, at the end of this topic, presents the future value of R1 invested at the end of EACH year for a range of periods "n" and at a range of interest rates "i". In the next study unit you will see that we can replace

$$\left[\frac{(1+i)^n - 1}{i}\right]$$

with the applicable FV factor from Table D, instead of calculating it mathematically.

(c) The future value of an annuity is the sum of the future values of each individual payment (PMT's) or cash flows (CF's).

5.3 Future value (annuity due/annuity in advance)

The mathematical formula used for calculating the future value of an annuity due (using compound interest) is:

Key formula: FUTURE VALUE (ANNUITY DUE)

$$\text{FV annuity due} = I \times \left[\frac{(1+i)^{n+1} - 1}{i} - 1 \right]$$

Where: I = Annuity amount or payment

NOTE

This formula differs from the FV formula for an ordinary annuity (as presented in activity 8.4) only in that – 1 is subtracted (to recognise the first payment that is paid now) and 1 is added to the number of periods (n + 1) since the first payment was made at the beginning of the year and was already accounted for when 1 was subtracted.

Formula: ordinary annuity	Formula: annuity due
$\text{FV annuity} = I \times \left[\frac{(1+i)^{n} - 1}{i} \right]$	$FV_A(due) = I \times \left[\frac{(1+i)^{n+1} - 1}{i} - 1 \right]$

Activity 8.5

Future value (annuity due/annuity in advance)

You intend to establish a savings account for your child's university education when he enters high school. You will make payments of R5 000 each into this account at the beginning of each year and you will earn compound interest of 8% per annum on your investment. You are required to calculate the future value of the annuity due after five years when your child will have finished his high school education by using a:

i. mathematical formula

ii. pocket calculator

[Work to four decimal places and round your final answer to the nearest rand.]

Feedback on activity 8.5

i. Mathematical formulae

$$\text{FV annuity due} = \text{R5 000} \times \left[\frac{(1+0{,}08)^{5+1}-1}{0{,}08} - 1\right]$$

$$= \text{R5 000} \times \left[\frac{(1+0{,}08)^{6}-1}{0{,}08} - 1\right]$$

$$= \text{R5 000} \times \left[\frac{(1{,}5869-1)}{0{,}08} - 1\right]$$

$$= \text{R5 000} \times \left[\frac{(0{,}5869}{0{,}08} - 1\right]$$

$$= \text{R5 000} \times (7{,}3359 - 1)$$

$$= \text{R5 000} \times 6{,}3359$$

$$= \text{R31 679{,}6452}$$

$$= \text{R31 680 (rounded to the nearest rand)}$$

NOTE

Since repetitive equal cash flows are made at the beginning of each of the five years the mathematical formula is equal to the sum of the future values of all payments (PMT's) or cash flows (CF's) (single amounts).

Years:	**1**		**2**		**3**		**4**		**5**
FV =	$FV_{pmt\ 1}$	+	$FV_{pmt\ 2}$	+	$FV_{pmt\ 3}$	+	$FV_{pmt\ 4}$	+	$FV_{pmt\ 5}$
FV =	$FV_{CF\ 1}$	+	$FV_{CF\ 2}$	+	$FV_{CF\ 3}$	+	$FV_{CF\ 4}$	+	$FV_{CF\ 5}$
FV =	$PV(1+i)^1$	+	$PV(1+i)^2$	+	$PV(1+i)^3$	+	$PV(1+i)^4$	+	$PV(1+i)^5$

$= \text{R5 000}(1{,}08)^1 + \text{R5 000}(1{,}08)^2 + \text{R5 000}(1{,}08)^3 + \text{R5 000}(1{,}08)^4 + \text{R5 000}(1{,}08)^5$

= R5 000(1,08) + R5 000(1,1664) + R5 000(1,2597) + R5 000(1,3605) + R5 000(1,4693)

= R5 400 + R5 832 + R6 298,5000 + R6 802,5000 + R7 346,5000

= R31 679,5000

= R31 680

ii. Pocket calculator

Required calculator steps:	Display
Key in **1.08 2ndF y^x 6 =**	1,5869
Deduct 1	0,5869
Divide by 0,08	7,3359
Subtract 1	6,3359
Multiply with 5 000	31 679,6452

= R31 680 (rounded to the nearest rand)

6 Present value

DISCOUNTING

Discounting is the process used to determine the original investment (principal) amount by discounting the future value, which resulted from the compounding of interest, back to the present value. (Discounting is thus used to determine the present value of an investment.)

Discounting is therefore the inverse of compounding. This method determines the current value of an investment when the future value is available.

PRESENT VALUE

The present value is the current value of future cash flows, determined by application of the discount rate (discounting).

In calculations, the present value is abbreviated as PV. The phenomenon where a smaller amount will be accepted today for the settlement of a larger amount due in future is called discounting back to the present value. Discounting addresses the question of what an amount, receivable or payable at a specific time in the future, is worth today.

6.1 Present value (single payment)

The mathematical formula used for calculating present value of a single amount is:

Key formula: PRESENT VALUE (SINGLE PAYMENT)

$$PV = \left[\frac{FV}{(1+i)^n}\right]$$

Where FV = Future value
PV = Present value
i = Interest rate
n = Number of years or periods

You can also derive the PV formula from the FV formula:

$FV = PV(1 + i)^n$

Divide by $(1 + i)^n$ on both sides: $= \left[\frac{FV}{(1+i)^n}\right] = \left[\frac{PV(1+i)^n}{(1+i)^n}\right]$

$$PV = \left[\frac{FV}{(1+i)^n}\right]$$

NOTE

This is a very important formula, so please, make sure that you fully understand it.

Note that if FV is assumed to be R1, the mathematical formula, $\left[\frac{1}{(1+i)^n}\right]$

is called the **PV factor of R1 received or paid after n years**. Table A, at the end of this topic, presents the present value of R1 invested ONCE for a range of periods and at a range of interest rates. In the next study unit you will see that we can replace

$$\left[\frac{1}{(1+i)^n}\right]$$

with the applicable PV factor from Table A, instead of calculating it mathematically.

Activity 8.6

Present value (single payment)

In five years from now, you want to buy a car to the value of R180 000. What is the amount that you must invest now (today) at 10% compound interest per annum in order to reach your goal of R180 000 at the end of the five-year period?

[Work to four decimal places and round your final answer to the nearest rand.]

Feedback on activity 8.6

$$PV = \left[\frac{FV}{(1+i)^n}\right]$$

$$= \left[\frac{R180\,000}{(1+0{,}10)^5}\right]$$

$$= \left[\frac{R180\,000}{1{,}6105}\right]$$

= R111 767
(rounded to the nearest Rand)

Where $(1 + i)^n$ = *(1,10 × 1,10 × 1,10 × 1,10 × 1,10) = 1,6105*

Year	Beginning balance	Interest R	Closing balance R
5	180 000 ÷ 1,10 = 163 636,36	16 363,64	180 000,00
4	163 636,36 ÷ 1,10 = 148 760,58	14 875,78	163 636,36
3	148 760,58 ÷ 1,10 = 135 236,89	13 523,69	148 760,58
2	135 236,89 ÷ 1,10 = 122 942,62	12 294,27	135 236,89
1	122 942,62 ÷ 1,10 = 111 766,01	11 176,61	122 942,62

The amount that you must invest now is the PV of the future cash flows, determined by the application of the discount rate, calculated to be R111 767.

6.2 Present value (ordinary annuity)

The mathematical formula used for calculating the present value of an ordinary annuity is:

Key formula: PRESENT VALUE (ORDINARY ANNUITY)

$$\text{PV annuity} = I \times \left[\frac{1 - \frac{1}{(1+i)^n}}{i} \right]$$

Where: I = Annuity amount or payment

Activity 8.7

Present value (ordinary annuity)

An amount of R10 000 is to be invested annually at the end of each year for five years at 10% compound interest per annum. Determine the present value of this annuity.

[Work to four decimal places and round your final answer to the nearest rand.]

Feedback on activity 8.7

$$= \text{R10 000 x} \left[\frac{1 - \frac{1}{(1+0{,}10)^5}}{0{,}10} \right]$$

$$= \text{R10 000 x} \left[\frac{1 - \frac{1}{(1{,}10)^5}}{0{,}10} \right]$$

$$= \text{R10 000 x} \left[\frac{1 - \frac{1}{1{,}6105}}{0{,}10} \right]$$

$$= \text{R10 000 x} \left[\frac{1 - 0{,}6209}{0{,}10} \right]$$

$$= \text{R10 000 x} \left[\frac{0{,}3791}{0{,}10} \right]$$

= R10 000 x 3,7907

= R37 907,48

= R37 908 (rounded to the nearest rand)

NOTE

The present value of an annuity is the sum of the present values of each payment (PMT's) or cash flows (CF's).

Therefore, the present value of an annuity is the amount of money that must be invested now, at i percent, so that n equal periodic payments may be withdrawn without any money left over at the end of the term of n periods.

Since repetitive equal cash flows are made at the end of each of the following five years the mathematical formula is equal to:

Years: 1 2 3 4 5

$PV = PV_{pmt\ 1} + PV_{pmt\ 2} + PV_{pmt\ 3} + PV_{pmt\ 4} + PV_{pmt\ 5}$

$PV = PV_{CF\ 1} + PV_{CF\ 2} + PV_{CF\ 3} + PV_{CF\ 4} + PV_{CF\ 5}$

$$PV = \left[\frac{FV}{(1+i)^n}\right] + \left[\frac{FV}{(1+i)^n}\right] + \left[\frac{FV}{(1+i)^n}\right] + \left[\frac{FV}{(1+i)^n}\right] + \left[\frac{FV}{(1+i)^n}\right]$$

$$= \left[\frac{10000}{(1+0{,}10)^1}\right] + \left[\frac{10000}{(1+0{,}10)^2}\right] + \left[\frac{10000}{(1+0{,}10)^3}\right] + \left[\frac{10000}{(1+0{,}10)^4}\right] + \left[\frac{10000}{(1+0{,}10)^5}\right]$$

$$= \left[\frac{10000}{(1{,}1000)}\right] + \left[\frac{10000}{(1{,}2100)}\right] + \left[\frac{10000}{(1{,}3310)}\right] + \left[\frac{10000}{(1{,}4641)}\right] + \left[\frac{10000}{(1{,}6105)}\right]$$

= 9 090,91 + 8 264,46 + 7 513,15 + 6 830,14 + 6 209,21

= R37 907,87

= R37 908 (rounded to the nearest rand)

NOTE

Note that if I is assumed to be R1, the mathematical formula, $\left[\frac{1-\frac{1}{(1+i)^n}}{i}\right]$

is called the **PV factor of R1 per annum received or paid at the end of the year for n years**. Table B, at the end of this topic, shows the present value of R1 invested at the end of EACH year (annuity) for a range of periods and at a range of interest rates. In the next study unit you will see that we can replace

$\left[\frac{1-\frac{1}{(1+i)^n}}{i}\right]$

with the applicable PV factor (annuity) from Table B, instead of calculating it mathematically.

6.3 Present value (perpetuity)

PERPETUITY

A perpetuity means that the cash flow will be received or paid periodically at certain time intervals into infinity, since there is no termination date. Another example of a perpetuity would be a non-redeemable preference share paying a fixed dividend.

The formula used for calculating the present value of a perpetuity (PV_P) is:

Key formula: PRESENT VALUE (PERPETUITY)

$$PV_P = \frac{I}{i}$$

Where:

I = investment or payment per period = annuity amount

i = interest rate or required return (expressed as a decimal)

Activity 8.8

Present value (perpetuity)

You have invested an amount of money at 8% compound interest and will receive R2 000 annually indefinitely. What is the present value (PV) of the amount you invested?

[Work to four decimal places and round your final answer to the nearest rand.]

Feedback on activity 8.8

$$PV_P = \frac{I}{i}$$

$$= \frac{2\,000}{0{,}08}$$

$$= R25\,000$$

6.4 Present value (annuity due/annuity in advance)

The formula used for the present value of an annuity **due** is:

Key formula: PRESENT VALUE (ANNUITY DUE)

$$PV_A(due) = I \times \left[\frac{1 - \frac{1}{(1+i)^{n-1}}}{i} + 1 \right]$$

NOTE

This formula differs from the PV formula for an ordinary annuity (as presented in activity 8.7) only in that + 1 is added (to recognise the first payment that is paid now) and 1 is subtracted from the number of periods (n – 1) because the first payment was already accounted for when 1 was added.

Formula: ordinary annuity	Formula: annuity due
PV annuity = I x $\left[\frac{1-\frac{1}{(1+i)^n}}{i}\right]$	PV_A(due) = I x $\left[\frac{1-\frac{1}{(1+i)^{n-1}}}{i}+1\right]$

Activity 8.9

Present value (annuity due/annuity in advance)

You decided to rent out your house for five years. You will receive five payments from the tenants, R100 000 now and R100 000 at the beginning of year 2, 3, 4 and year 5. You are required to calculate the present value of the annuity due by using 10% as the discount rate.

[Work to four decimal places and round your final answer to the nearest rand.]

Feedback on activity 8.9

The present value of the rent that you will receive over the next five years is:

$$= \text{I x } \left[\frac{1-\frac{1}{(1+i)^{n-1}}}{i}+1\right]$$

$$= \text{R100 000 x } \left[\frac{1-\frac{1}{(1+0{,}10)^{5-1}}}{0{,}10}+1\right]$$

$$= \text{R100 000 x } \left[\frac{1-\frac{1}{(1+0{,}10)^{4}}}{0{,}10}+1\right]$$

$$= \text{R100 000 x } \left[\frac{1-\frac{1}{1{,}4641}}{0{,}10}+1\right]$$

$$= \quad R100\,000 \times \left[\frac{1 - 0{,}6830}{0{,}10} + 1\right]$$

$$= \quad R100\,000 \times \left[\frac{0{,}3170}{0{,}10} + 1\right]$$

$$= \quad R100\,000 \times [3{,}1699 + 1]$$

$$= \quad R100\,000 \times 4{,}1699$$

$$= \quad R416\,990$$

NOTE

Since repetitive equal cash flows are made at the beginning of each of five years the mathematical formula is equal to the sum of the present values of all payments (PMT's) or cash flows (CF's).

The first payment (at the beginning of the year) is regarded as received in year 0. This means that the first payment (cash flow) need not be discounted to present value as it is receivable now. The second payment (cash flow) is receivable at the beginning of year 2, which is regarded similar to a cash flow receivable at the end of year 1.

Years: **0** **1** **2** **3** **4**

$$PV = PV_{pmt\ 1} + PV_{pmt\ 2} + PV_{pmt\ 3} + PV_{pmt\ 4} + PV_{pmt\ 5}$$

$$PV = PV_{CF\ 1} + PV_{CF\ 2} + PV_{CF\ 3} + PV_{CF\ 4} + PV_{CF\ 5}$$

$$PV = \left[\frac{FV}{(1{,}000)}\right] + \left[\frac{FV}{(1+i)^n}\right] + \left[\frac{FV}{(1+i)^n}\right] + \left[\frac{FV}{(1+i)^n}\right] + \left[\frac{FV}{(1+i)^n}\right]$$

$$= \left[\frac{100\,000}{1{,}000}\right] + \left[\frac{100000}{(1+0{,}10)^1}\right] + \left[\frac{100\,000}{(1+0{,}10)^2}\right] + \left[\frac{100\,000}{(1+0{,}10)^3}\right] + \left[\frac{100\,000}{(1+0{,}10)^4}\right]$$

$$= \left[\frac{100\,000}{(1{,}000)}\right] + \left[\frac{100000}{1{,}1000}\right] + \left[\frac{100\,000}{(1{,}2100)}\right] + \left[\frac{100\,000}{(1{,}3310)}\right] + \left[\frac{100\,000}{(1{,}4641)}\right]$$

$$= \quad 100\,000 + 90\,909{,}09 + 82\,644{,}62 + 75\,131{,}48 + 68\,301{,}34$$

$$= \quad R416\,986{,}53$$

$$= \quad R416\,987$$

6.5 Present value (unequal payments)

In this scenario the future payments are not equal, so you cannot use the mathematical formula for the PV of an ordinary annuity formula. You can alternatively use the principle that the PV is the sum of the PV's of all the individual cash flows.

Activity 8.10

Present value (unequal payments)

You wish to make annual investments. You can afford to invest the following amounts at the end of each year, over the next four years.

Year 1	R15 000
Year 2	R10 000
Year 3	R 6 000
Year 4	R 5 000

The investment will earn 10% annually compounded interest. You are required to determine the present value of these unequal payments.

[Work to four decimal places and round your final answer to the nearest rand.]

Feedback on activity 8.10

$$PV = \left[\frac{FV}{(1+i)^n}\right] + \left[\frac{FV}{(1+i)^n}\right] + \left[\frac{FV}{(1+i)^n}\right] + \left[\frac{FV}{(1+i)^n}\right]$$

$$= \left[\frac{15000}{(1+0{,}10)^1}\right] + \left[\frac{10000}{(1+0{,}10)^2}\right] + \left[\frac{6000}{(1+0{,}10)^3}\right] + \left[\frac{5000}{(1+0{,}10)^4}\right]$$

$$= \left[\frac{15000}{(1{,}1000)}\right] + \left[\frac{10000}{(1{,}2100)}\right] + \left[\frac{6000}{(1{,}3310)}\right] + \left[\frac{5000}{(1{,}4641)}\right]$$

$$= 13\,636{,}36 + 8\,264{,}46 + 4\,507{,}89 + 3\,415{,}07$$

$$= R29\,823{,}78$$

$$= R29\,824 \text{ (rounded to the nearest rand)}$$

7 Other types of interest rates

We apply nominal, periodic and effective interest rates in time value of money calculations where the compounding takes place more than once per year. We will now discuss each individually.

7.1 Nominal annual rate

NOMINAL ANNUAL RATE

In cases where interest is calculated more than once a year, the annual rate quoted is the nominal annual rate or nominal rate.

This is the rate that banks and other financial institutions normally quote. The nominal rate quoted to consumers, is also called the annual percentage rate (APR). When a credit card issuer quotes an annual rate of 16%, the APR is 16%.

Activity 8.11

You invested R2 000 at 14% interest per annum for three years. What is the nominal rate of your investment if …

a. interest is calculated half-yearly?
b. interest is calculated quarterly?
c. interest is calculated daily?

Feedback on activity 8.11

The nominal rate is 14% per annum in all three cases a to c.

7.2 Periodic rate

PERIODIC RATE

The periodic rate is the rate charged by a lender or paid by a borrower each period.

The periodic rate has a specified time interval, for example per day, per month, per quarter, per six-month period (bi-annually or half-yearly) or per year.

The formula to determine the periodic rate is:

Key formula: PERIODIC RATE

$$\text{Periodic rate } (i_{PER}) = \frac{i_{Nom}}{n}$$

Where n = the number of compounding periods per year
i_{Nom} = the nominal interest rate

From the above formula, restate as follows:

$$i_{Nom} = \text{periodic rate} \times n$$

NOTE

If interest is added (compounded) only ONCE per year (n = 1), the periodic rate is equal to the nominal rate.

Activity 8.12

A finance company provide loans at 3% per quarter (∴ periodic rate = 3%). Determine the nominal rate.

Feedback on activity 8.12

i_{Nom} = Periodic rate x number of compounding periods per year
= 3% x 4
= 12%

7.3 Effective interest rate (compounding more than once per year)

EFFECTIVE ANNUAL INTEREST RATE

Effective annual interest rate (EAR) refers to the annual rate, which derives the same result as the compound interest rate, at a given periodic rate, for a given number of compounding periods PER year. The effective annual rate is therefore the annual rate which, if compounded once a year, will give the same result as the interest per period compounded a number of times per year.

Effective interest rates are useful when comparing investment alternatives with different compounding periods.

For example, if the interest on Investment A is compounded bi-annually (every six months), the number of periods per year will be two (2). Therefore, if you are required to determine the future value of Investment A after three years, the number of periods will be 2 x 3 = 6. The same principle will apply if interest is compounded quarterly. For example, if interest on Investment B is calculated quarterly, the number of periods per year will be four (4) because there are four quarters (of three months each) per year. If you are required to determine the future value of Investment B after two years, the number of periods will be 4 x 2 = 8.

The formula used for calculating the effective interest rate is:

Key formula: EFFECTIVE INTEREST RATE

$$\text{Effective interest rate} = \left[1 + \left(\frac{i}{n}\right)\right]^{n} - 1$$

Where: i = the nominal interest rate
n = number of compounding periods per annum

and $\left(\frac{i}{n}\right)$ = the periodic rate

Activity 8.13

You want to invest money in order to pay your university fees. Two options are available:

a. Use a special savings account that pays 1% interest compounded monthly
b. Use a premium savings account with a 12% quoted nominal interest rate per annum, compounded quarterly

Which option will you choose?

Feedback on activity 8.13

Firstly, you need to express the cost (interest) of each option as an EAR (effective annual rate) as follows:

Formula: Effective interest rate = $\left[1+\left(\frac{i}{n}\right)\right]^{n} - 1$

a. Special savings account: EAR = $(1 + 0{,}01)^{12} - 1{,}0$
= $(1{,}01)^{12} - 1{,}0$
= $1{,}1268 - 1{,}0$
= $0{,}1268$
= $12{,}68\%$

b. Premium savings account: EAR = $(1 + 0{,}03)^{4} - 1{,}0$
= $(1{,}03)^{4} - 1{,}0$
= $1{,}1255 - 1{,}0$
= $0{,}1255$
= $12{,}55\%$

NOTE

From the different EAR's you can see that the special savings account is slightly **more beneficial** than the premium savings account. Although both options have the same nominal rate of 12%, monthly interest is calculated on the special savings account as opposed to quarterly interest on the premium savings account. From this example you can see that the effective rate increases when the frequency of compounding increases.

Activity 8.14

The nominal interest rate on a loan is 15% per annum compounded four-monthly. Determine the effective annual cost of the loan by using the relevant formula.

Feedback on activity 8.14

Effective interest rate $= \left[1+\frac{i}{n}\right]^{n} - 1$

$= \left[1+\frac{0,15}{3}\right]^{3} - 1$

$= (1 + 0,05)^{3} - 1$

$= 1,1576 - 1$

$= 0,1576$

$\approx 15,76\%$

When the effective rate and the number of compounding periods per annum are available, you can use the following formula to determine the nominal rate:

Key formula: NOMINAL RATE

Nominal rate	=	$n[(1 + i)^{1/n} - 1]$

Where i = effective interest rate, expressed as a percentage
n = number of periods **per annum** used to compound interest

Activity 8.15

The effective interest rate of a loan is 15% per annum. Interest is compounded every six months. Determine the nominal rate. [Use four decimal places (SETUP 0 0 4 or 2ndF DISP 4) in your calculation and round the final percentage off to two decimal places.]

Feedback on activity 8.15

Nominal rate $= n[(1 + i)^{1/n} - 1]$

$= 2[(1,15)^{½} - 1]$

$= 2(1,0724 - 1)$

$= 2(0,0724)$

$= 0,1448$

$= 14,48\%$

8 Interpolation and extrapolation

INTERPOLATION

Interpolation refers to the calculation used to determine an actual rate, where the actual rate lies between two specific rates.

The factor tables at the end of this study unit give pre-calculated factors for particular rates (%) and periods (n). Sometimes a rate must be determined that falls between two of the tabulated rates, for example between 5% and 6%. Interpolation is then required to find the rate between 5% and 6%.

Key formula: INTERPOLATION

$$a + \left[\frac{x-y}{x-z} x (b-a)\right]$$

Illustration:

You have calculated the present value of a future amount by using 5% as discount rate and determined a PV of R195.

You also calculated the present value of the same future amount by using 6% as discount rate and determined a PV of R180.

You, however, need to determine the discount rate used to derive at a PV of R190.

Calculation of the discount rate for PV of R190

a		b
5%	?%	6%
|	|	|
R195	R190	R180
x	y	z

Use the smallest discount rate (a = 5%)

+ (the corresponding PV of the smallest discount rate (x = R195), minus the PV of the unknown rate which lies between the two known rates (y = R190)

÷ (the corresponding PV of the smallest discount rate (x = R195), minus the corresponding PV of the highest discount rate (z = R180)

x the difference between the two known rates ($b - a$)

$$a + \left[\frac{x-y}{x-z} x (b-a)\right]$$

$$5\% + \left[\frac{195-190}{195-180} x (6\%-5\%)\right]$$

$$5\% + \left[\frac{5}{15} \times 1\%\right]$$

5% + 0,33%

= 5,33%

Activity 8.16

You have concluded the following instalment sale agreement:

	R
Cost price	5 000
Deposit	(1 000)
	4 000
Simple interest: 10% per annum for 2 years (R4 000 x 10% x 2)	800
	4 800
∴ Monthly payments over 2 years (R4 800 ÷ 24)	R200

Determine the effective annual cost (interest rate) of the R4 000 instalment sale agreement. Round the percentage rate to two decimal places.

Feedback on activity 8.16

Effective annual cost = $\left[1+\left(\frac{i}{n}\right)\right]^{n} - 1$

= $(1 + 0{,}015337①)^{12} - 1$

= $(1{,}015337①)^{12} - 1$

= 1,20039② – 1

= 0,20039

≈ 20,039%

The effective annual rate is 20,04%.

Calculations:

① Periodic rate (as input in the effective annual cost formula above)

Present value = annuity x *present value of R1 per period factor for 24 periods*

Let present value of R1 per period factor for 24 periods = *Z*

∴ 4 000 = 200 x Z

200Z = 4 000

Z = (4 000 ÷ 200)

∴ Z = **20**

You will find that **20** lies between 1% (factor 21,243) and 2% (factor 18,914) on the 24-period horizontal row in Table B.

By interpolation, the periodic cost ① equals:

a		*b*
1%	?%	2%
21,243	20	18,914
x	*y*	*z*

$$a + \left[\frac{x-y}{x-z} x (b-a)\right]$$

$$= \quad 1\% + \left[\frac{21{,}243 - 20}{21{,}243 - 18{,}914} \times 1\%\right]$$

$$= \quad 1\% + \left[\frac{1{,}243}{2{,}329} \times 1\%\right]$$

$$= \quad 1\% + (0{,}5337 \times 1\%)$$

$$= \quad 1\% + 0{,}5337\%$$

$$= \quad 1{,}5337\%$$

② $(1 + 0{,}015337①)^{12}$

$(1{,}015337)^{12}$

$$= \quad 1{,}20039$$

EXTRAPOLATION

Extrapolation refers to the calculation used to determine an actual rate where this actual rate lies outside (not within) two specific rates.

Key formula: EXTRAPOLATION

$$b + \left[\frac{y-z}{x-y} x (b-a)\right]$$

Illustration:

You have calculated the present value of a future amount by using 5% as discount rate and determined a PV of R195.

You also calculated the present value of the same future amount by using 6% as discount rate and determined a PV of R180.

You, however, need to determine the discount rate to derive at a PV of R172.

Calculation of the discount rate for PV of R172

a	b	c
5%	6%	?%
R195	R180	R172
x	y	z

Use the discount rate that is just smaller than the unknown rate (b = 6%)

\+ (the corresponding PV of that rate (y = R180), minus the PV of the unknown rate that lies outside the two known rates (z = R172)

÷ (the corresponding PV of the smallest discount rate (x = R195), minus the corresponding PV of the next discount rate (y = R180)

x the difference between the two known rates ($b - a$).

$$b + \left[\frac{y-z}{x-y} x (b-a)\right]$$

$$6\% + \left[\frac{180-172}{195-180} x (6-5)\right]$$

$$6\% + \left[\frac{8}{15} x 1\right]$$

6% + 0,533%

= 6,53%

9 Calculating the periodic payment I or PMT

PERIODIC PAYMENT

The periodic payment I or PMT, is the amount of the annuity, namely the stream of equal amounts, invested per period or the equal periodic repayments of a loan.

Applying this definition to loans and the financial calculator function (in the next study unit), calculates the periodic payments (PMT) for a loan based on constant payments and a constant interest rate.

$$\text{PV annuity} = I \times \left[\frac{1 - \frac{1}{(1+i)^n}}{i}\right]$$

The **present value of an annuity formula** above can be restated to calculate the periodic payments I or PMT.

Steps to restate the formula in order to calculate I or PMT:

Making I the subject (periodic payment), one gets

$$\text{PV annuity} \times i = I \times \left[1 - \frac{1}{(1+i)^n}\right]$$

$$I = \frac{\text{PV annuity} \times i}{\left[1 - \frac{1}{(1+i)^n}\right]}$$

You can restate the **future value of an annuity** formula in a similar way in order to calculate the periodic payments or PMT.

$$\text{FV annuity} = I \times \left[\frac{(1+i)^n - 1}{i}\right]$$

Steps to restate the formula in order to calculate I or PMT:

Making I the subject (periodic payment), one gets

$$I = \frac{\text{FV annuity}}{\left[\frac{(1+i)^n - 1}{i}\right]}$$

NOTE

The applicable formula, from the two restated formulae above, that you will use to calculate I or PMT will depend on the information available:

i Should you know the PV of the investment, you will need to determine I or PMT by using the restated formula regarding the PV of annuity formula.

ii Should you know the FV of the investment, you will need to determine I or PMT by using the restated formula regarding the FV of annuity formula.

Activity 8.17 (amount invested per period, I)

You want to save money for an overseas trip that you intend to undertake in five years' time. The amount that you will need after five years to pay for the trip is R40 000. You can invest money at 8% compound interest per annum. How much should you invest every year in order to have the required amount after five years?

Feedback on activity 8.17

$$I = \frac{\text{FV annuity}}{\left[\frac{(1+i)^n - 1}{i}\right]}$$

$$= \frac{R40\,000}{\left[\frac{(1+0{,}08)^5 - 1}{0{,}08}\right]}$$

$$= \frac{R40\,000}{\left[\frac{(1{,}08)^5 - 1}{0{,}08}\right]}$$

$$= \frac{R40\,000}{\left[\frac{1{,}4693 - 1}{0{,}08}\right]}$$

$$= \frac{R40\,000}{\left[\frac{0{,}4693}{0{,}08}\right]}$$

$$= \frac{R40\,000}{5{,}8666}$$

= R6 818,2593

= R6 818 per year (rounded to the nearest rand)

Activity 8.18 (repayment of a loan PMT)

Your father borrowed R10 000 today by means of a loan from his bank. The annual interest rate on the loan is 10% per annum. The loan must be repaid in three equal annual instalments at the end of years 1, 2 and 3. How much will your father need to pay as the periodic annuity instalment?

Feedback on activity 8.18

$$I = \frac{\text{PV annuity x } i}{\left[1 - \frac{1}{(1+i)^n}\right]}$$

$$= \frac{\text{PV annuity x } 0{,}10}{\left[1-\frac{1}{(1+0{,}10)^3}\right]}$$

$$= \frac{\text{R10 000 x } 0{,}10}{\left[1-\frac{1}{(1{,}10)^3}\right]}$$

$$= \frac{\text{R10 000 x } 0{,}10}{\left[1-\frac{1}{1{,}3310}\right]}$$

$$= \frac{1\,000}{1-0{,}7513}$$

$$= \frac{1\,000}{0{,}2487}$$

= R4 020,9087

= R4 021 (rounded to the nearest rand)

10 Summary of symbols used in time value of money

n	=	Number of periods or payments
i	=	Interest rate, expressed as a decimal (eg 5% = 0,05)
PV	=	Present value
FV	=	Future value
Pmt	=	Constant payment (I) per period

NOTE

The following formulae must be memorised. You should know them for examination purposes. You should be able to determine WHICH formula to use in each case, and in which order to solve the steps in the formulae with the use of your pocket calculator.

Symbol	Description	Formula	Initial cash flow	
			Beginning of period	End of period
S	Future value of **R1**	$(1 + i)^n$	x	
v^n	Present value of **R1**	$\frac{1}{(1+i)^n}$		x
$s_{\overline{n}\rceil}$	Future value of **R1 per period**	$\frac{(1+i)^n - 1}{i}$		x
$a_{\overline{n}\rceil}$	Present value of **R1 per period**	$\left[\frac{1-\frac{1}{(1+i)^n}}{i}\right]$		x
$\ddot{s}_{\overline{n}\rceil}$	Future value of **R1 per period** paid in advance	$\left[\frac{(1+i)^{n+1}-1}{i} \quad -1\right]$	x	
$\ddot{a}_{\overline{n}\rceil}$	Present value of **R1 per period** paid in advance	$\left[\frac{1-\frac{1}{(1+i)^{n-1}}}{i}+1\right]$	x	

In the formulae: n = number of periods

i = effective interest rate, expressed as a decimal (eg 10% is expressed as 0,10)

NOTE

Did you notice that the formulae regarding annuities (per period) divides by "i" in each case?

The list above supply alternative symbols used in various text books. The symbols used in this module may differ from those used in other text books but the principles of how the values are calculated, are consistent.

11 Summary

In this study unit we defined what is meant by the time value of money. We explained single cash flows, various types of annuities and unequal cash flows. We presented mathematical formulae for the calculation of future and present values and illustrated the application of the formulae. We distinguished between nominal, periodic and effective interest rates. These are all time value of money concepts that you will need to understand and apply when you calculate the cost of capital (cost of different sources of finance), make finance or investment decisions, and so on.

We also illustrated the calculation of future values and present values by using mathematical formulae and your pocket calculator only. In the next study unit, we will present alternative methodologies, such as the use of factor tables and the use of a financial calculator to solve time value of money problems.

Self-assessment activity

After having worked through this study unit, determine if you are able to answer the following questions:

Match the following concepts to the correct definition:

1. the present value concept
2. the future value concept
3. compound interest
4. simple interest
5. the concept of discounting

Definition:

a. It is the amount that an investment will be worth at a future date if invested at a particular simple or compound interest rate.
b. It is the current value of future cash flows, determined by application of a discount rate.
c. It is the process used to determine the present value of an investment.
d. It is the interest on the principal investment for the entire term.
e. It is the calculation of interest and the addition of that interest to the principal for investment in the following period.

Feedback on question 1:
Statement (b) is correct.

Feedback on question 2:
Statement (a) is correct.

Feedback on question 3:
Statement (e) is correct.

Feedback on question 4:
Statement (d) is correct.

Feedback on question 5:
Statement (c) is correct.

Match the following concepts to the correct definition:

6. unequal cash flows
7. a single cash flow
8. an ordinary annuity
9. a perpetuity
10. an annuity due

Definition:

a. It is a non-repetitive cash inflow or outflow.

b. It is an annuity where the payments continue indefinitely.
c. It is the unequal cash flows that occur repetitively at the end of each payment interval.
d. It is an annuity where the payments fall due at the beginning of each period.
e. It is an annuity where the payments take place at the end of each payment interval.

Feedback on question 6:
Statement (c) is correct.

Feedback on question 7:
Statement (a) is correct.

Feedback on question 8:
Statement (e) is correct.

Feedback on question 9:
Statement (b) is correct.

Feedback on question 10:
Statement (d) is correct.

Which of the formulae listed below is the correct formula to use in order to calculate each of the following concepts?

11. the present value of a single amount?
12. the present value of an ordinary annuity?
13. the future value of an annuity due?
14. the future value of an ordinary annuity?
15. the present value an annuity due?

Formulae:

(a) $$I \times \left[\frac{1 - \frac{1}{(1+i)^{n-1}}}{i} + 1 \right]$$

(b) $$\left[\frac{FV}{(1+i)^n} \right]$$

(c) $$I \times \left[\frac{(1+i)^n - 1}{i} \right]$$

(d) $$I \times \left[\frac{(1+i)^{n+1} - 1}{i} \right] - 1$$

(e) $$I \times \left[\frac{1 - \frac{1}{(1+i)^n}}{i} \right]$$

Feedback on question 11:
Formula (b) is correct.

Feedback on question 12:
Formula (e) is correct.

Feedback on question 13:
Formula (d) is correct.

Feedback on question 14:
Formula (c) is correct.

Feedback on question 15:
Formula (a) is correct.

Which of the formulae listed below is the correct formula to use in order to calculate each of the following concepts?

16. the effective interest rate
17. the nominal interest rate
18. the periodic interest rate
19. the present value of a perpetuity
20. the effective interest rate by means of interpolation

Formulae:

(a) $n[(1 + i)^{1/n} - 1]$

(b) $\left[1 + \frac{i}{n}\right]^{n} - 1$

(c) $\frac{i_{Nom}}{n}$

(d) $a + \left[\frac{x - y}{x - z} x\ (b - a)\right]$

(e) $\frac{I}{i}$

Feedback on question 16:
Formula (b) is correct.

Feedback on question 17:
Formula (a) is correct.

Feedback on question 18:
Formula (c) is correct.

Feedback on question 19:
Formula (e) is correct.

Feedback on question 20:
Formula (d) is correct.

STUDY UNIT 9

Alternative methodologies for solving TVM problems

In this study unit

1 Introduction

In the previous study unit we provided mathematical formulae for the calculation of future and present values and we showed you how to apply these formulae. In this study unit, we will introduce you to two additional methods that you can use to perform these calculations. We will start by explaining the use of factor tables and then go on to explain how to use a financial calculator.

2 The use of pre-calculated interest factor tables

The tables contain pre-calculated "factors" for useful combinations of compound/discount rate and time period.

NOTE

The mathematical formulae presented in the previous study unit are used to arrive at the pre-calculated factors that are presented in the tables. Note that the formulae correspond with those presented in the previous study unit. The only difference is that R1 is used as cash flow when calculating the factors instead of the actual amounts, which are used when applying the mathematical formulae in the previous study unit. See the references made in study unit 8 that link the mathematical formulae to the applicable tables. Present value mathematical formulae are linked to Table A and B and future value mathematical formulae are linked to Table C and Table D.

The required present or future value can be calculated by multiplying the <u>actual</u> rand value of the cash flow(s) that will be received/paid with the <u>applicable time value factor</u>.

The four basic factor tables are included at the end of this study unit:

Table A : Present value of R1 AFTER n years (cash flow occurs at END of period).
Table B : Present value of R1 per annum received FOR n years (cash flow occurs at END of period).

Table C : Future value of R1 AFTER n years (cash flow occurs at BEGINNING of period).
Table D : Future value of R1 per annum received FOR n years (cash flow occur at END of period).

The table below presents the mathematical formulae used to calculate the factors as presented in the pre-calculated tables.

Description	Formula for time value factor
TABLE A: Present value of R1	$\frac{1}{(1+i)^n}$
TABLE B: Present value of R1 per period (annuity)	$\left[\frac{1-\left(\frac{1}{(1+i)^n}\right)}{i}\right]$
TABLE C: Future value of R1	$(1+i)^n$
TABLE D: Future value of R1 per period (annuity)	$\frac{(1+i)^n-1}{i}$

NOTE

Perpetuities are not tabled. You should use the mathematical formula as presented in the previous study unit, namely: $PV_P = \frac{I}{i}$

Neither FV factors of annuities paid in advance nor PV factors of annuities paid in advance are tabled. For calculation of these factors you still need to use the mathematical formulae as presented in the previous study unit, namely:

Future value of R1 per period paid **in advance**

$$\left[\left(\frac{(1+i)^{n+1}-1}{i}\right)-1\right]$$

Present value of R1 per period paid **in advance**

$$\left[\left(\frac{1-\frac{1}{(1+i)^{n-1}}}{i}\right)+1\right]$$

2.1 Which time value factor to use?

Do you have to compute the future value or the present value?

- If future value, use future value factor.
- If present value, use a present value factor.

Do you have to compute an annuity or a single amount?

- If an annuity, use a R1 per period factor.
- If a single amount, use a R1 factor after n years.

2.2 The relationship between FV, PV and payments (I)

In all the time value of money calculations, we will use the following equations:

Single amounts

(1a) **FV** = present value of single amount x future value of R1 factor,

or

(Restate this equation in such a way that the present value of single amount is on the left side of the equation.) The equation will then be:

(1b) Present value of single amount $= \dfrac{\text{Future value}}{\text{Future value of R1 factor}}$

(2a) **PV** = future value of single amount x present value of R1 factor,

or

(Restate this equation in such a way that the future value of single amount is on the left side of the equation.) The equation will then be:

(2b) Future value of single amount $= \dfrac{\text{Present value}}{\text{Present value of R1 factor}}$

Annuities (I) or (PMT)

(3a) **FV** = annuity x future value of R1 per period factor,

or

(Restate this equation in such a way that the annuity amount is on the left side of the equation). The equation will then be:

(3b) Annuity $= \dfrac{\text{Future value}}{\text{Future value of R1 per period factor}}$

(4a) **PV** = annuity x present value of R1 per period factor,

or

(Restate this equation in such a way that the annuity amount is on the left side of the equation). The equation will then be:

(4b) Annuity $= \dfrac{\text{Present value}}{\text{Present value of R1 per period factor}}$

(4c) PV of perpetuity = $\frac{\text{Annuity or guaranteed annual return received or paid (I)}}{\text{Required rate of return (i)}}$

2.3 How will you solve problems?

Decide on the following:

What is required?
What is given?
Which equation is applicable?

Place the required on the left side of the equation and the given information on the right side of the equation that you are using and solve the problem.

2.4 The relationship between Table A and Table B (present values)

$$a_{\overline{n}|} = \sum_{1}^{n} v^n$$

The above mathematical statement means that the sum of individual factors in Table A is equal to the factor stated in Table B.

For example, according to Table B, the factor of R1 per annum for 4 years at 10% is 3,170.

According to Table A, the factors of R1 after n years at 10% are as follows:

Year	1	(n = 1)	0,909
	2	(n = 2)	0,826
	3	(n = 3)	0,751
	4	(n = 4)	0,683
Years	1–4		3,169

The difference is attributable to rounding.

2.5 The relationship between Table C and Table D (future values)

Note that the sum of individual factors in Table C is not equal to the factors in Table D. This is due to the fact that the initial amount in Table C is invested at the **beginning** of the period, whereas the initial amount in Table D is invested at the **end** of each period.

A factor in Table D, for an investment made at the **end** of the period, can however be converted to a factor relating to an investment made at the **beginning** of the period, as follows:

Factor Table D at 10% for three years (received at end)	3,3100
Factor for investment made at beginning of period (3,3100 x 1,10)	3,6410

This factor relating to an investment made at the beginning of the period is equal to the sum of the factors in Table C at 10%:

Year 1	1,1000
Year 2	1,2100
Year 3	1,3310
Total	3,6410

2.6 Reasonability check

When calculating factors, always check for reasonability:

- Future value of R1 factor (single) – always more than 1
- Present value of R1 factor (single) – always less than 1
- Future value of R1 per period factor – always more than the number of periods
- Present value of R1 per period factor – always less than the number of periods

3 The use of a financial calculator

This is the most commonly used method, because time value formulae are already programmed into the calculator.

NOTE

In order to enhance your own learning experience, we recommend that you **only** use a financial calculator where the question **does not stipulate another approach**.

We used a SHARP EL-738 and a Hp10BII financial calculator to do the calculations that follow in later activities.

It is your responsibility to study the accompanying manual of your financial calculator. Make sure you know how to operate your financial calculator. If you do not have the manual available you can go to the following links on the internet to obtain the manuals for the Hp10BII and SHARP EL738 respectively:

http://h10032.www1.hp.com/ctg/Manual/bpia5213.pdf, and

http://www.manualowl.com/p/Sharp/EL-738/Manual/114796

SECOND FUNCTIONS

SHARP EL-738: The 2ndF (second functions) key, is indicated on the SHARP EL-738 financial calculator (top left orange key).

Hp10BII: The orange key (called a ***shift annunciator*** in the manual) on the Hp10BII is the key to press first before you can use functions printed **in orange** on the bottom of the keys.

THIRD FUNCTIONS

SHARP EL-738: Only has second functions, NO third functions.

Hp10BII: The blue key (***shift annunciator***) on the Hp10BII is the key to press first before you can use functions printed **in blue** above the keys.

DECIMAL PLACES

We consistently use a comma (,) in all our study material to **INDICATE A DECIMAL PLACE**. However, a financial calculator does not allow for the keying in of a comma.

You need to use the full stop key (.) to enter a decimal place. In the **SHARP EL-738 and Hp10BII** explanations on how to use your financial calculator, when you see a comma **INDICATING A DECIMAL**, for instance an interest rate of 9,25% you need to enter 9.25%.

Preparing your financial calculator

It is important to execute the following steps each time at the start of an activity or calculation. These steps will clear the previous settings.

SHARP EL-738		**Hp10BII**	
Key in:	Display will read:	Key in:	Display will read:
Select NORMAL mode: MODE 0	Normal STAT 0 1	No preliminaries required.	
To clear all registers: 2ndF CA	0.0000	To clear all registers: 2ndF; C ALL	Ensure that 1 P _ YR appear on the screen unless if a different period is intended. – To change to 1 period per year: 1; 2ndF; P/YR Ensure that "BGN" does not appear on the screen unless intended. To clear: 2ndF BEG/END
(We used four decimal places in all the activities that follow) To set decimal places: SETUP 0 0 4	0.0000	To set decimal places: 2ndF DISP 4	0.0000

Always use four decimal places, unless the question specifically requires you to use a different setting.

4 Activities using all three methods

The first decision you need to make is to determine the appropriate **method to apply**. This will, in practice, normally involve the use of a financial calculator with pre-programmed formulae.

For the purposes of this module, the required method will be stated in the questions. You may **only** use a financial calculator if the question **does not stipulate another approach**

NOTE

In this module we will seldom require the use of a financial calculator. The aim of this part of the syllabus is to help you to develop an understanding of the concept "time value of

money", of the various types of interest rates and of the mechanics of applying the time value of money to practical examples. We will not achieve any of these aims if we simply teach you how to operate a financial calculator.

Calculation of future values:

Activity 9.1 – Future value – single present cash flow
Activity 9.2 – Future value – annuity
Activity 9.3 – Future value – annuity due

Calculation of present values:

Activity 9.4 – Present value – single future cash flow
Activity 9.5 – Present value – ordinary annuity
Activity 9.6 – Present value – perpetuity
Activity 9.7 – Present value – annuity due
Activity 9.8 – Present value – unequal amounts

Calculation of payment/instalment:

Activity 9.9 – Repayment of a loan (PMT)
Activity 9.10 – Amount to invest to reach FV (I)

Calculation of nominal and effective rates:

Activity 9.11 – Calculate the effective rate
Activity 9.12 – Calculate the nominal rate

Activity 9.1

Future value – single present cash flow

Someone would like to invest R5 000 at an annual compound interest rate of 14%. Determine the future value of the investment:

a. after 1 year
b. after 3 years

Use the following methods to determine the FV of the investment:

i. Mathematical formulae together with your pocket calculator
ii. factor tables method
iii. financial calculator

[Use four decimals and round your final answer to the nearest rand.]

Feedback on activity 9.1

a. Future value of R5 000 after 1 year

What is required? The FV of a single present cash flow needs to be calculated.

i. Mathematical formula:

Select the appropriate mathematical formula from study unit 8.

Future value = $PV(1 + i)^n$

= $R5\ 000\ (1 + 0{,}14)^1$

= R5 000 x 1,14

= R5 700

ii. Factor tables method:

Decide on the equation to be used.

Select equation (1a) **FV** = present value single amount x future value of R1 factor

FV = PV x future value of R1 factor

= R5 000 x 1,14①

= R5 700

① Table C at 14% after 1 year = 1,1400

iii. Financial calculator:

	SHARP EL-738		**Hp10BII**	
	Key in:	Display will read:	Key in:	Display will read:
Clear all registers:	2ndF CA	0.0000	2ndF C ALL	1 P/YR 0.0000
Number of periods:	1 N	1.0000	1 N	1.0000
Interest rate:	14 I/Y	14.0000	14 I/YR	14.0000
Present value of initial outflow:	5000+/– PV	–5'000.0000	5000+/– PV	–5,000.0000
Calculate (compute) the present value of the outflow:	COMP FV	5'700.0000	FV	5,700.0000

The future value after one year is R5 700.

b. **Future value of R5 000 after 3 years**

i. Mathematical formula:

Select the appropriate mathematical formula from study unit 8.

Future value = $PV(1 + i)^n$

= $R5\ 000\ (1 + 0{,}14)^3$

= R5 000 x 1,4815

= R7 407,72

= R7 403 (rounded to the nearest rand)

ii. Factor tables method:

Decide on the equation to be used.

Select equation (1a) **FV** = present value single amount x future value of R1 factor

FV = PV x future value of R1 factor

= R5 000 x 1,4815①

= R7 407,5

① Table C at 14% after 3 years = 1,4815

iii. Financial calculator:

	SHARP EL-738		Hp10BII	
	Key in:	Display will read:	Key in:	Display will read:
Clear all registers:	2ndF CA	0.0000	2ndF C ALL	1 P/YR 0.0000
Number of periods:	3 N	3.0000	3 N	3.0000
Interest rate:	14 I/Y	14.0000	14 I/YR	14.0000
Present value of initial outflow:	5000+/– PV	–5'000.0000	5000+/– PV	–5,000.0000
Calculate (compute) the present value of the outflow:	COMP FV	7'407.7200	FV	7,407.7200

The future value after three years is R7 408 (rounded to the nearest rand).

NOTE

Limited rounding differences will be accommodated in the marking of questions, if the specific rounding requirements were not stipulated.

Activity 9.2

Future value – annuity

A person would like to invest R5 000 at the **end** of **each year** at an annual compound interest rate of 14%. Determine the value of the investment after four years.

Use the following methods to determine the FV of the investment:

i. mathematical formulae together with your pocket calculator
ii. factor tables method
iii. financial calculator

[Use four decimals and round your final answer to the nearest rand.]

Feedback on activity 9.2

Future value of R5 000 per year invested at the end of the year

What is required? The FV of an ordinary annuity needs to be calculated.

i. Mathematical formula:
Select the appropriate mathematical formula from study unit 8.

$$\text{FV annuity} = \text{I x} \left[\frac{(1+i)^n - 1}{i}\right]$$

$$= \text{R5 000 x} \left[\frac{(1+0{,}14)^4 - 1}{0{,}14}\right]$$

$$= \text{R5 000 x} \left[\frac{(1{,}14)^4 - 1}{0{,}14}\right]$$

$$= \text{R5 000 x} \left[\frac{1{,}6890 - 1}{0{,}14}\right]$$

$$= \text{R5 000 x} \left[\frac{0{,}6890}{0{,}14}\right]$$

= R5 000 x 4,9211
= R24 605,72
= R24 606 (rounded to the nearest rand)

ii. Factor tables method:
Decide on the equation to be used.

Select equation (3a)	**FV**	=	annuity x future value of R1 per period factor
	FV	=	annuity x future value of R1 per period factor
		=	R5 000 x 4,9211①
		=	R24 605,50
		=	R24 606 (rounded to the nearest rand)

① Table D at 14% after 4 years = 4,9211

iii. Financial calculator:

	SHARP EL-738		Hp10BII	
	Key in:	Display will read:	Key in:	Display will read:
Clear all registers:	2ndF CA	0.0000	2ndF C ALL	1 P/YR 0.0000
Number of periods:	4 N	4.0000	4 N	4.0000
Interest rate:	14 I/Y	14.0000	14 I/YR	14.0000
Present value of annuity/pmt:	5000+/– PMT	–5'000.0000	5000+/–PMT	–5,000.0000
Calculate (compute) the future value:	COMP FV	24'605.7200	FV	24,605.7200

The future value after three years is R24 606 (rounded to the nearest rand).

Activity 9.3

Future value annuity due

Use the same information as for activity 9.2. Assume that the R5 000 is invested at the **beginning** of each year (an annuity due).

Use the following methods to determine the FV of the investment:

i. mathematical formulae together with your pocket calculator
ii. factor tables method
iii. financial calculator

[Use four decimals and round your final answer to the nearest rand.]

Feedback on activity 9.3

Future value of R5 000 per year – invested at the <u>beginning</u> of the year

What is required? The FV of an annuity due needs to be calculated.

i. Mathematical formula:
Select the appropriate mathematical formula from study unit 8.

$$\text{FV annuity due} = \text{R5 000} \times \left[\frac{(1+0{,}14)^{4+1}-1}{0{,}14} - 1\right]$$

$$= \text{R5 000} \times \left[\frac{(1+0{,}14)^{5}-1}{0{,}14} - 1\right]$$

$$= R5\,000 \times \left[\frac{(1{,}9254 - 1}{0{,}14} - 1\right]$$

$$= R5\,000 \times \left[\frac{(0{,}9254}{0{,}14} - 1\right]$$

= R5 000 x (6,6101 – 1)

= R5 000 x 5,6101

= R28 050,3571

= R28 050 (rounded to the nearest rand)

ii. Factor tables method:

Decide on the equation to be used.

Select equation (3a) **FV** = annuity x future value of R1 per period factor invested at the beginning of the year.

FV = annuity x future value of R1 per period factor

= R5 000 x 5,6101①

= R28 050,50

① **Table D** represents investments made at the **end** of the period, therefore this factor must be converted to a factor that will apply to investments made at the **beginning** of the period.

Table D at 14% for (n + 1) = 5 years:	6,6101
Factor for investment made at beginning:	– 1,0000
	5,6101

OR

Factor: Table C after:	1 year	1,1400
	2 years	1,2996
	3 years	1,4815
	4 years	1,6890
	Total	5,6101

iii. Financial calculator:

	SHARP EL-738		Hp10BII	
	Key in: 2ndF BGN/END	Display will read: BGN	Key in: 2ndF Beg/End	Display will read:
Clear all registers:	2ndF CA	0.0000	2ndF C ALL	1 P/YR 0.0000
Number of periods:	4 N	4.0000	4 N	4.0000
Interest rate:	14 I/Y	14.0000	14 I/YR	14.0000
Present value of annuity/pmt:	5000+/– PMT	–5'000.0000	5000+/– PMT	–5,000.0000
Calculate (compute) the future value:	COMP FV	28'050.5208	FV	28,050.5208

The future value after four years is R28 051 (rounded to the nearest rand).

Activity 9.4

Present value of single future cash flow

Someone would like to invest a once off amount at an annual compound interest rate of 14% in order to receive R8 500 after four years. Determine the current amount that he should invest now in order to receive the amount of R8 500 after four years.

Use the following methods to determine the PV of the investment:

i. mathematical formulae together with your pocket calculator
ii. factor tables method
iii. financial calculator

[Use four decimals and round your final answer to the nearest rand.]

Feedback on activity 9.4

Present value of R8 500 after four (4) years

What is required? The PV of a single cash flow needs to be calculated.

i. Mathematical formula:

Select the appropriate mathematical formula from study unit 8.

$$PV = \left[\frac{FV}{(1+i)^n}\right]$$

$$= \left[\frac{R8\,500}{(1+0{,}14)^4}\right]$$

$$= \left[\frac{R8\,500}{(1{,}14)^4}\right]$$

$$= \left[\frac{R8\,500}{1{,}6890}\right]$$

$$= R5\ 032{,}5636$$

$$= R5\ 033 \text{ (rounded to the nearest rand)}$$

ii. Factor tables method:

Decide on the equation to be used.

Select equation (2a) **PV** = FV x present value of R1 factor.

PV = FV x present value of R1 factor

= R8 500 x 0,592①

= R5 032

① Table A at 14% after 4 years = 0,592

iii. Financial calculator:

	SHARP EL-738		**Hp10BII**	
	Key in:	Display will read:	Key in: 1 2ndF P/Y	Display will read: 1 0000
Clear all registers:	2ndF CA	0.0000	2ndF C ALL	1 P/YR 0.0000
Number of periods:	4 N	4.0000	4 N	4.0000
Interest rate:	14 I/Y	14.0000	14 I/YR	14.0000
Future value of cash flow:	8500+/– FV	–8'500.0000	8500+/– FV	–8,500.0000
Calculate (compute) the present value:	COMP PV	5'032.6824	PV	5,032.6824

The present value after four years is R5 033 (rounded to the nearest rand).

Activity 9.5

Present value of ordinary annuity

An amount of R1 000 is to be invested annually at the end of each year for three (3) years at 10% compound interest per annum.

Determine what the present value of this annuity will be at the beginning of the first year.

Use the following methods to determine the PV of the investment:

i. mathematical formulae together with your pocket calculator
ii. factor tables method
iii. financial calculator

[Use four decimals and round your final answer to the nearest rand.]

Feedback on activity 9.5

Present value of R1 000 annuity

What is required? The PV of an ordinary annuity needs to be calculated.

i. Mathematical formula:
   Select the appropriate mathematical formula from study unit 8.

$$\text{PV annuity} = I \times \left[\frac{1-\frac{1}{(1+i)^n}}{i}\right]$$

$$= \text{R1 000} \times \left[\frac{1-\frac{1}{(1+0{,}10)^3}}{0{,}10}\right]$$

$$= \text{R1 000} \times \left[\frac{1-\frac{1}{(1{,}10)^3}}{0{,}10}\right]$$

$$= \text{R1 000} \times \left[\frac{1-\frac{1}{1{,}3310}}{0{,}10}\right]$$

$$= \text{R1 000} \times \left[\frac{1-0{,}7513}{0{,}10}\right]$$

$$= \text{R1 000} \times \left[\frac{0{,}2487}{0{,}10}\right]$$

$$= \text{R1 000} \times 2{,}4869$$

$$= \text{R2 486,8520}$$

$$= \text{R2 487 (rounded to the nearest rand)}$$

ii. Factor tables method:

Decide on the equation to be used.

Select equation (4a) **PV** = annuity x present value of R1 per period factor.

PV = annuity x present value of R1 per period factor

= R1 000 x 2,487①

= R2 487

① Table B at 10% for 3 years = 2,487

iii. Financial calculator:

NOTE

We use the term payment (PMT) when we refer to annuity situations that, according to the definition of annuities, involve equal payments that are the same for every period.

	SHARP EL-738		Hp10BII	
	Key in:	Display will read:	Key in:	Display will read:
Clear all registers:	2ndF CA	0.0000	2ndF C ALL	1 P/YR 0.0000
Number of periods:	3 N	3.0000	3 N	3.0000
Interest rate:	10 I/Y	10.0000	10 I/YR	10.0000
Payments:	1000+/– PMT	–1'000.0000	1000+/– PMT	–1,000.0000
Calculate (compute) the present value of the outflow:	COMP PV	2'486.8520	PV	2,486.8520

The present value after three years is R2 487 (rounded to the nearest rand).

Activity 9.6

Present value perpetuity

Your grandmother wants to establish a trust fund for you by investing an amount of money at 14% compounded annually. She wants you to receive R24 000 per year indefinitely from the trust fund. What is the present value of the amount that your grandmother will have to invest now?

Use the following methods to determine the PV of the investment:

i. mathematical formulae together with your pocket calculator
ii. equation and pocket calculator

[Use four decimals and round your final answer to the nearest rand.]

Feedback on activity 9.6

Present value of a R24 000 annuity received indefinitely

What is required?

The PV of a perpetuity needs to be calculated.

i. Mathematical formula:
Select the appropriate mathematical formula from study unit 8.

$$PV_P = \frac{I}{i}$$

$$PV_P = \frac{24\,000}{0{,}14}$$

$$= 171\,428{,}5714$$

ii. Equation method:
Decide on the equation to be used.
Select equation (4c).

$$\text{PV of perpetuity} = \frac{\text{Annuity or guaranteed annual return received or paid (I)}}{\text{Required rate of return (i)}}$$

$$= \frac{R24\,000}{14\%}$$

$$= \frac{R24\,000}{0{,}14}$$

$$= R171\,428{,}57$$

$$= R171\,429 \text{ (rounded to the nearest rand)}$$

Activity 9.7

PV annuity due

An amount of R6 000 is to be invested annually at the beginning of each year for three years at 10% compound interest per annum.

Determine what the present value of this annuity will be at the beginning of the first year.

Use the following methods to determine the PV of the investment:

i. mathematical formulae together with your pocket calculator

ii. factor tables method

iii. financial calculator

[Use four decimals and round your answer to the nearest rand.]

Feedback on activity 9.7

Present value of R6 000 annuity due

What is required? The PV of an annuity due needs to be calculated.

i. Mathematical formula:

Select the appropriate mathematical formula from study unit 8.

$$PV_A(due) = I \times \left[\frac{1 - \frac{1}{(1+i)^{n-1}}}{i} + 1 \right]$$

$$= R6\,000 \times \left[\frac{1 - \frac{1}{(1+0{,}10)^{3-1}}}{0{,}10} + 1 \right]$$

$$= R6\,000 \times \left[\frac{1 - \frac{1}{(1+0{,}10)^{2}}}{0{,}10} + 1 \right]$$

$$= R6\,000 \times \left[\frac{1 - \frac{1}{1{,}2100}}{0{,}10} + 1 \right]$$

$$= R6\,000 \times \left[\frac{1 - 0{,}8264}{0{,}10} + 1 \right]$$

$$= R6\,000 \times \left[\frac{0{,}1736}{0{,}10} + 1 \right]$$

$$= R6\,000 \times [1{,}7355 + 1]$$

$$= R6\,000 \times 2{,}7355$$

$$= R16\,413{,}22$$

$$= R16\,413 \text{ (rounded to nearest rand)}$$

NOTE

Since repetitive equal cash flows are made at the beginning of each of the three years the mathematical formula is equal to the sum of the present values of all payments (cash flows).

The first payment (at the beginning of the year) is regarded as received in year 0. This means that the first payment (cash-flow) need not be discounted to present value, because it is receivable now. The second payment (cash-flow) is receivable at the beginning of year 2, which is regarded as similar to a cash-flow receivable at the end of year 1.

Years: **0** **1** **2**

$PV = PV_{CF\,1} + PV_{CF\,2} + PV_{CF\,3}$

$$PV = \left[\frac{FV}{1{,}000}\right] + \left[\frac{FV}{(1+i)^n}\right] + \left[\frac{FV}{(1+i)^n}\right]$$

$$= \left[\frac{6\,000}{1{,}000}\right] + \left[\frac{6\,000}{(1+0{,}10)^1}\right] + \left[\frac{6\,000}{(1+0{,}10)^2}\right]$$

$$= \left[\frac{6\,000}{(1{,}000)}\right] + \left[\frac{6\,000}{1{,}100}\right] + \left[\frac{6\,000}{(1{,}21)}\right]$$

= 6 000 + 5 454,5455 + 4 958,6777

= R16 413,2232

= R16 413 (rounded to nearest rand)

ii. Factor tables method:

Decide on the equation to be used.

Select equation (4a) **PV** = annuity x present value of R1 per period factor.

NOTE

This is an annuity due (received/paid at the beginning of the period): Table B shows the PV factors of annuities received/paid at the end of the year for n years. You should adjust the factor from Table B as was explained by means of a note in the previous study unit (study unit 8), activity 8.9. Use the Table B factor of the previous period (n – 1) and add 1,000.

PV = annuity x present value of R1 per period factor (Table B)

= R6 000 x 2,736①

= R16 416 (the difference is due to rounding of the factors in the table to three decimals)

① Table B at 10% for **2** years = 1,736 **+ 1,000** = 2,736

iii. Financial calculator:

	SHARP EL-738		Hp10BII	
	Key in:2ndF BGN/END	Display will read: BGN	Key in: 2ndF Beg/End	Display will read: BEG
Clear all registers:	2ndF CA	0.0000	2ndF C ALL	1 P/YR 0.0000
Number of periods:	3 N	3.0000	3 N	3.0000
Interest rate:	10 I/Y	10.0000	10 I/YR	10.0000
Payments:	6000+/– PMT	–6'000.0000	6000+/– PMT	–6,000.0000
Calculate (compute) the present value of the outflow:	COMP PV	16'413.2231	PV	16,413.2231

The present value of the annuity due is R16 413 (rounded to the nearest rand). The slight difference of R3 is because of the rounding of the factors in Table B to three decimals.

An annuity due/payment of an equal amount per period for a number of years at the beginning of the period is regarded as similar to cash flows received at the beginning of each period. The present values of these cash flows, called net present value (**NPV**), can also be calculated by means of a financial calculator in the following way:

	SHARP EL-738		Hp10BII
Number of PMT's/cash flows = 3 of R6 000 at the <u>beginning</u> of each year Interest rate = 10%			
Key in:	Display will read:	Key in:	Display will read:
2ndF BGN/END	BGN 0.0000	2ndF Beg/End	Beg/End
Clear all registers first:			
CFi 2ndF CA	0.0000	2ndF C ALL	1 P/YR 0.0000
Enter data sets:			
6000 ENT	DATA SET:CF 0	6000 CF_j	CFLO/CF 6,000.0000
6000 ENT	DATA SET:CF 1	6000 CF_j	CFLO/CF 6,000.0000
6000 ENT	DATA SET:CF 2	6000 CF_j	CFLO/CF 6,000.0000
Clear cash flow registers:			
ON/C	0.0000		
2ndF CASH	RATE(I/Y) =		
2ndF CA	RATE(I/Y) = 0.0000		
Enter rate:			
(I/Y) 10 ENT	RATE(I/Y) = 10.0000	10 I/YR	10.0000
Use arrows to get to NPV and press COMP	NET-PV = 16'413,2231	2ndF NPV	16,413.2231

Rounded to the nearest rand = R16 413

OR

	SHARP EL-738		Hp10BII
Number of PMT's/cash flows = 3 of R6 000 at the beginning of each year Interest rate = 10%			
Key in:	Display will read:	Key in:	Display will read:
2ndF BGN/END	BGN 0.0000	2ndF Beg/End	Beg/End
Clear all registers first:			
CFi 2ndF CA	0.0000	2ndF C ALL	1 P/YR 0.0000
Enter data sets:			
6000 (x, y) 3 ENT	DATA SET:CF 0.0000	6000 INPUT 3 CF_j	CFLO/ N 3,000.0000
Clear cash flow registers:			
ON/C	0.0000		
2ndF CASH	RATE(I/Y) =		
2ndF CA	RATE(I/Y) = 0.0000		
Enter rate:			
I/Y 10 ENT	RATE(I/Y) = 10.0000	10 I/YR	10.0000
Use arrows to get to NPV			
and press COMP	NET-PV = 0.0000 16'413.2231	2ndF NPV	16,413.2231

Activity 9.8

PV unequal amounts

We use the term payment (PMT) when we refer to annuity situations which, according to the definition of annuities, involve equal payments that are the same for every period. However, when the payments are not equal (unequal payments), we rather use the term cash flow (CF) to refer to an uneven stream of cash flows.

Mrs Evelyn bakes cakes for a home industry. She has determined that she will receive the following cash flows from selling her cakes at the end of each year for the next four (4) years:

Year 1 : R1 000
Year 2 : R2 000
Year 3 : R2 500
Year 4 : R3 000

She wants to know the present value of her future income. Assume that she can earn 6% compound interest on the money if she invests each amount when she receives it.

Use the following methods to determine the PV of her future income:

i. mathematical formulae together with your pocket calculator

ii. factor tables method

iii. financial calculator

[Use four decimals and round your final answer to the nearest rand.]

Feedback on activity 9.8

i. Mathematical formulae

We cannot use the mathematical formula for an ordinary annuity or factor tables to determine the PV of unequal cash flows. However, we have already illustrated that we can calculate the PV's of all the future cash flows, add them together and arrive at the PV of the unequal cash flows. (Refer to activity 8.10 in the previous study unit – 8.)

Years: **1** **2** **3** **4**

$PV = PV_{pmt\ 1} + PV_{pmt\ 2} + PV_{pmt\ 3} + PV_{pmt\ 4}$

$PV = PV_{CF\ 1} + PV_{CF\ 2} + PV_{CF\ 3} + PV_{CF\ 4}$

$$PV = \left[\frac{FV}{(1+i)^n}\right] + \left[\frac{FV}{(1+i)^n}\right] + \left[\frac{FV}{(1+i)^n}\right] + \left[\frac{FV}{(1+i)^n}\right]$$

$$\left[\frac{1000}{(1+0{,}06)^1}\right] + \left[\frac{2000}{(1+0{,}06)^2}\right] + \left[\frac{2500}{(1+0{,}06)^3}\right] + \left[\frac{3000}{(1+0{,}06)^4}\right]$$

$$\left[\frac{1\,000}{1{,}06}\right] + \left[\frac{2000}{1{,}1236}\right] + \left[\frac{2500}{1{,}191}\right] + \left[\frac{3000}{1{,}2625}\right]$$

= 943,3962 + 1 779,9929 + 2 099,0764 + 2 376,2376

= R7 198,7031

= R7 199 (rounded to the nearest rand)

ii. Factor tables method:

When we use the PV factors to calculate the PV of each of the single future cash flows the equation is:

PV = Future value of single amount (cash flow) x present value of R1 factor (Table A)

Years:		**1**		**2**		**3**		**4**
PV	=	$PV_{CF\ 1}$	+	$PV_{CF\ 2}$	+	$PV_{CF\ 3}$	+	$PV_{CF\ 4}$
	=	(1 000 x 0,943)	+	(2 000 x 0,890)	+	(2 500 x 0,840)	+	(3 000 x 0,792)
		943	+	1 780	+	2 100	+	2 376
	=	R7 199						

iii. Financial calculator:

	SHARP EL-738		Hp10BII
Number of PMT's/cash flows = 4 unequal of R1 000, R2 000, R2 500 and R3 000 at the end of years 1–4 Interest rate = 6%			
Key in:	Display will read:	Key in:	Display will read:
Clear all registers first:			
CFi 2ndF CA	0.0000	2ndF C ALL	1 P/YR 0.0000
Enter data sets:			
0 ENT	DATA SET:CF 0	0 CF_j	CFLO/CF 0.0000
1000 ENT	DATA SET:CF 1	1000 CF_j	CFLO/CF 1,000.0000
2000 ENT	DATA SET:CF 2	2000 CF_j	CFLO/CF 2,000.0000
2500 ENT	DATA SET:CF 3	2500 CF_j	CFLO/CF 2,500.0000
3000 ENT	DATA SET:CF 4	3000 CF_j	CFLO/CF 3,000.0000
Clear cash flow registers:			
ON/C	0.0000		
2ndF CASH	RATE(I/Y) =		
2ndF CA	RATE(I/Y) = 0.0000		
Enter rate:			
(I/Y) 6 ENT	RATE(I/Y) = 6.0000	6 I/YR	6.0000
Use arrows to get to NPV and press COMP	NET-PV = 7'198.7183	2ndF NPV	7,198.7183

Rounded to the nearest rand = R7 199

Activity 9.9

Repayment of a loan (PMT)

A finance company has financed a R100 000 loan. The loan is repayable in equal instalments over 15 years, including capital and interest, and the finance company wants to earn interest at 18% per annum on its finance agreement.

Determine the annual instalment requirement.

i. Use the appropriate equation, factors from the tables and round off your final answer to the nearest rand.
ii. Test your answer by using a financial calculator.

Feedback on activity 9.9

Repayment of loan/annual instalment

i. Equation and factors from appropriate Table:

$$\text{Annuity} = \frac{\text{Present value}}{\text{Present value of R1 per period factor at 18\% for 15 years}}$$

$$= \frac{\text{R100 000}}{\text{5,092 (per Table B)}}$$

$$= \text{R19 639}$$

The annual instalment is R19 639.

ii. Financial calculator:

	SHARP EL-738		Hp10BII	
	Key in:	Display will read:	Key in:	Display will read:
Clear all registers:	2ndF CA	0.0000	2ndF C ALL	1 P/YR 0.0000
Number of periods:	15 N	15.0000	15 N	15.0000
Interest rate:	18 I/Y	18.0000	18 I/YR	18.0000
Payments:	100000+/– PV	–100'000.0000	100 000+/– PMT	–100,000.0000
Calculate (compute) the payment:	COMP PMT	19'640.2783	PMT	19,640.2783

Rounded to the nearest rand = R19 640

Activity 9.10

Amount to invest (I) to reach FV

You will need R40 000 as a deposit on a car when you go to university at the end of the next five (5) years. How much will you need to invest annually at 12% compounded interest for the next five years in order to have the R40 000 as a deposit:

Determine the annual investment.

i. Use the appropriate equation, factors from the tables and round off your answer to the nearest rand.
ii. Test your answer by using a financial calculator.

Feedback on activity 9.10

i. Investment to reach a FV

$$\text{Annuity} = \frac{\text{Future value}}{\text{Future value of R1 per period factor}}$$

$$= \frac{\text{R40 000}}{\text{6,3528 (Table D)}}$$

$$= \text{R6 296,4362}$$

$$\approx \text{R6 296 per year}$$

ii. Financial calculator:

	SHARP EL-738		Hp10BII	
	Key in:	Display will read:	Key in:	Display will read:
Clear all registers:	2ndF CA	0.0000	2ndF C ALL	1 P/YR 0.0000
Number of periods:	5 N	5.0000	5 N	5.0000
Interest rate:	12 I/Y	12.0000	12 I/YR	12.0000
Future value:	40000+/– FV	–40'000.0000	40 000 +/– FV	–40,000.0000
Calculate (compute) the payment:	COMP PMT	6'296.3893	PMT	6,296.3893

Rounded to the nearest rand = R6 296

Activity 9.11

Calculate effective interest rate

You see an advertisement from a bank that advertises a 12-month fixed deposit rate of 8,5% nominal. The advertisement states that you will earn interest monthly and the effective rate on this 12-month fixed deposit is 8,84%. Determine whether this effective interest rate is correct.

i. Use the appropriate formula.

ii. Test your answer by using a financial calculator.

Feedback on activity 9.11

i. Formula.

$$\text{Effective interest rate} = \left[1+\frac{i}{n}\right]^{n} - 1$$

$$= \left[1+\frac{0{,}085}{12}\right]^{12} - 1$$

$$= (1 + 0{,}0071)^{12} - 1$$

$$= (1{,}0071)^{12} - 1$$

$$= 1{,}0884 - 1$$

$$= 0{,}0884$$

$$= 8{,}84\%$$

ii. Financial calculator:

SHARP EL-738 **Hp10BII**

Number of periods = 12 (monthly = 12 per year) and nominal interest rate = 8,5%				
Key in:		Display will read:	Key in:	Display will read:
Clear all registers:	2ndF CA	0.0000	2ndF C ALL	1 P/YR 0.0000
			12 2ndF P/YR	12.0000
	12 (x, y) 8.5 2ndF →EFF	8.8391	8.5 2ndF NOM%	8.5000
			2ndF EFF%	8.8391

Rounded to 8,84%

Activity 9.12

Calculate nominal interest rate

ZZC Bank offers a premium investment account that requires a minimum investment of R100 000. Interest is compounded quaterly. The effective interest rate is 6,14% per year. What is the nominal rate at which ZZC Bank can advertise this premium investment account?

i. Use the appropriate formula.

ii. Test your answer by using a financial calculator.

Feedback on activity 9.12

i. Formula:

Nominal rate $= n[(1 + i)^{1/n} - 1]$

$= 4[(1 + 0{,}0614)^{1/4} - 1]$

$= 4[(1{,}0614)^{1/4} - 1]$

$= 4[1{,}0150 - 1]$

$= 4 \times 0{,}0150$

$= 0{,}0600$

$= 6{,}00\%$

ii. Financial calculator:

SHARP EL-738 **Hp10BII**

Number of periods = 4 (quaterly = 4 per year) and effective interest rate = 6,14%				
Key in:		Display will read:	Key in:	Display will read:
Clear all registers:	2ndF CA	0.0000	2ndF C ALL	1 P/YR 0.0000
	4 (x, y) 6.14 2ndF →APR	6.0035	4 2ndF P/YR	4.0000
			6.14 2ndF EFF%	6.1400
			2ndF NOM%	6.0035

Rounded to 6,00%

5 Inflation

Inflation has the effect of decreasing the purchasing power of money. When you invest money, you will receive the principal plus interest at the end of the investment period. As a result of inflation your money will, however, have less purchasing power than when you made the investment. Investors should therefore require a higher return on their investment to compensate for the decline in the purchasing power of their money. In other words, the required return should be higher than the expected inflation rate. When the effective interest rate earned on an investment is less than the inflation rate, the investor will lose wealth in terms of the purchasing power of the money that was invested. This is because the present value (purchasing power) of the future or maturity value will be less than the original amount invested.

We will not go into more detail here about inflation since it falls outside the scope of this course. You will learn more about inflation in MAC3702.

6 Summary

In this topic, we discussed the time value of money. We explained the different concepts related to the time value of money that you will need to understand and apply when you calculate the cost of capital (cost of different sources of finance), and when you make financing or investment decisions, and so forth. We also defined, explained and illustrated the calculation of different types of interest.

We illustrated the calculation of future values and present values by using three different methods. We followed a systematic approach to solving time value of money problems and illustrated this approach by means of activities.

In the next topic, we will discuss different sources and forms of finance.

Self-assessment activity

After having worked through this study unit, determine if you are able to answer the following questions:

Use the information below to answer questions 1 to 3:

Mrs Balls will save this year's bonus of R3 000 in a special savings account at an annual compound interest rate of 14%. She wants to determine what the amount in her special savings account will be after five (5) years.

1. Which one of the following equations should she use?

   (a) PV x future value of R1 factor

   (b) $$\frac{\text{Future value}}{\text{Future value of R1 factor}}$$

   (c) $$\frac{\text{Future value}}{\text{Future value of R1 per period factor}}$$

   (d) Future value of single amount x present value of R1 factor

   (e) Annuity x present value of R1 per period factor

   Feedback on question 1:

   Equation (a) is correct.

2. Which one of the following factors should she use in the equation?

   (a) 1,1400
   (b) 1,2996
   (c) 1,4815
   (d) 1,6890
   (e) 1,9254

   Feedback on question 2:

   Factor (e) is the correct factor to use.

3. What is the amount in her special savings account after five (5) years? Use the factor from the appropriate table and round your final answer to the nearest rand.

   (a) R3 420
   (b) R3 899
   (c) R5 776
   (d) R5 067
   (e) R4 445

Feedback on question 3:

Alternative (c) is correct.

Use the information below to answer questions 4 to 6:

You want make an investment now at an annual compound interest rate of 8% in order to receive R12 000 after three (3) years when you will need to pay a deposit to rent a flat. You need to determine the amount that you have to invest now.

4. Which one of the following equations should you use?

   (a) PV x future value of R1 factor

   (b) $$\frac{\text{Future value}}{\text{Future value of R1 factor}}$$

   (c) $$\frac{\text{Future value}}{\text{Future value of R1 per period factor}}$$

   (d) Future value of single amount x present value of R1 factor

   (e) Annuity x present value of R1 per period factor

   Feedback on question 4:

   Equation (d) is correct.

5. Which one of the following factors should you use in the equation?

   (a) 0,926

   (b) 0,857

   (c) 0,794

   (d) 0,735

   (e) 2,577

   Feedback on question 5:

   Alternative (c) is correct.

6. What is the amount that you will have to invest now? Use the factor from the appropriate table and round your final answer to the nearest rand.

   (a) R11 112

   (b) R10 284

   (c) R8 820

   (d) R4 657

   (e) R9 528

   Feedback on question 6:

   Alternative (e) is correct.

   Use the information below to answer questions 7 to 9:

   Your client wants to obtain a loan to finance a new vehicle. His bank offers him a loan to the value of R120 000 at 16% interest per annum, repayable in equal annual instalments over six (6) years, including capital and interest. Your client has asked you to calculate the amount of the instalment that he will have to pay each year.

7. Which one of the following equations should you use?

(a) $$\frac{\text{Present value}}{\text{Present value of R1 per period factor}}$$

(b) $$\frac{\text{Future value}}{\text{Future value of R1 factor}}$$

(c) $$\frac{\text{Future value}}{\text{Future value of R1 per period factor}}$$

(d) Future value of single amount x present value of R1 factor

(e) Annuity x present value of R1 per period factor

Feedback on question 7:

Equation (a) is correct.

8. Which one of the following factors should you use in the equation?

(a) 2,798

(b) 3,274

(c) 3,685

(d) 1,418

(e) 6,975

Feedback on question 8:

Alternative (c) is correct.

9. What is the amount of the annual instalment that your client will have to pay? Use the factor from the appropriate table and round your final answer to the nearest rand.

(a) R42 888

(b) R32 564

(c) R17 204

(d) R53 428

(e) R31 712

Feedback on question 9:

Alternative (b) is correct.

TABLE A
PRESENT VALUE OF R1 RECEIVED/PAID AFTER N YEARS

Formula: $\frac{1}{(1+i)^n}$

Year N	1%	2%	4%	6%	8%	10%	12%	14%	15%	16%	18%	20%	22%	24%	25%	26%	28%	30%	35%
1	0,990	0,980	0,962	0,943	0,926	0,909	0,893	0,877	0,870	0,862	0,847	0,833	0,820	0,806	0,800	0,794	0,781	0,769	0,741
2	0,980	0,961	0,925	0,890	0,857	0,826	0,797	0,769	0,756	0,743	0,718	0,694	0,672	0,650	0,640	0,630	0,610	0,592	0,549
3	0,971	0,942	0,889	0,840	0,794	0,751	0,712	0,675	0,658	0,641	0,609	0,579	0,551	0,524	0,512	0,500	0,477	0,455	0,406
4	0,961	0,924	0,855	0,792	0,735	0,683	0,636	0,592	0,572	0,552	0,516	0,482	0,451	0,423	0,410	0,397	0,373	0,350	0,301
5	0,951	0,906	0,822	0,747	0,681	0,621	0,567	0,519	0,497	0,476	0,437	0,402	0,370	0,341	0,328	0,315	0,291	0,269	0,223
6	0,942	0,888	0,790	0,705	0,630	0,564	0,507	0,456	0,432	0,410	0,370	0,335	0,303	0,275	0,262	0,250	0,227	0,207	0,165
7	0,933	0,871	0,760	0,665	0,583	0,513	0,452	0,400	0,376	0,354	0,314	0,279	0,249	0,222	0,210	0,198	0,178	0,159	0,122
8	0,923	0,853	0,731	0,627	0,540	0,467	0,404	0,351	0,327	0,305	0,266	0,233	0,204	0,179	0,168	0,157	0,139	0,123	0,091
9	0,914	0,837	0,703	0,592	0,500	0,424	0,361	0,308	0,284	0,263	0,225	0,194	0,167	0,144	0,134	0,125	0,108	0,094	0,067
10	0,905	0,820	0,676	0,558	0,463	0,386	0,322	0,270	0,247	0,227	0,191	0,162	0,137	0,116	0,107	0,099	0,085	0,073	0,050
11	0,896	0,804	0,650	0,527	0,429	0,350	0,287	0,237	0,215	0,195	0,162	0,135	0,112	0,094	0,086	0,079	0,066	0,056	0,037
12	0,887	0,788	0,625	0,497	0,397	0,319	0,257	0,208	0,187	0,168	0,137	0,112	0,092	0,076	0,069	0,062	0,052	0,043	0,027
13	0,879	0,773	0,601	0,469	0,368	0,290	0,229	0,182	0,163	0,145	0,116	0,093	0,075	0,061	0,055	0,050	0,040	0,033	0,020
14	0,870	0,758	0,577	0,442	0,340	0,263	0,205	0,160	0,141	0,125	0,099	0,078	0,062	0,049	0,044	0,039	0,032	0,025	0,015
15	0,861	0,743	0,555	0,417	0,315	0,239	0,183	0,140	0,123	0,108	0,084	0,065	0,051	0,040	0,035	0,031	0,025	0,020	0,011
16	0,853	0,728	0,534	0,394	0,292	0,218	0,163	0,123	0,107	0,093	0,071	0,054	0,042	0,032	0,028	0,025	0,019	0,015	0,008
17	0,844	0,714	0,513	0,371	0,270	0,198	0,146	0,108	0,093	0,080	0,060	0,045	0,034	0,026	0,023	0,020	0,015	0,012	0,006
18	0,836	0,700	0,494	0,350	0,250	0,180	0,130	0,095	0,081	0,069	0,051	0,038	0,028	0,021	0,018	0,016	0,012	0,009	0,005
19	0,828	0,686	0,475	0,331	0,232	0,164	0,116	0,083	0,070	0,060	0,043	0,031	0,023	0,017	0,014	0,012	0,009	0,007	0,003
20	0,820	0,673	0,456	0,312	0,215	0,149	0,104	0,073	0,061	0,051	0,037	0,026	0,019	0,014	0,012	0,010	0,007	0,005	0,002
21	0,811	0,660	0,439	0,294	0,199	0,135	0,093	0,064	0,053	0,044	0,031	0,022	0,015	0,011	0,009	0,008	0,006	0,004	0,002
22	0,803	0,647	0,422	0,268	0,184	0,123	0,083	0,056	0,046	0,038	0,026	0,018	0,013	0,009	0,007	0,006	0,004	0,003	0,001
23	0,795	0,634	0,406	0,262	0,170	0,112	0,074	0,049	0,040	0,033	0,022	0,015	0,010	0,007	0,006	0,005	0,003	0,002	0,001
24	0,788	0,622	0,390	0,247	0,158	0,102	0,066	0,043	0,035	0,028	0,019	0,013	0,008	0,006	0,005	0,004	0,003	0,002	0,001
25	0,780	0,610	0,375	0,233	0,146	0,092	0,059	0,038	0,030	0,024	0,016	0,010	0,007	0,005	0,004	0,003	0,002	0,001	0,001
26	0,772	0,598	0,361	0,220	0,135	0,084	0,053	0,033	0,026	0,021	0,014	0,009	0,006	0,004	0,003	0,002	0,002	0,001	
27	0,764	0,586	0,347	0,207	0,125	0,076	0,047	0,029	0,023	0,018	0,011	0,007	0,005	0,003	0,002	0,002	0,001	0,001	
28	0,757	0,574	0,333	0,196	0,116	0,069	0,042	0,026	0,020	0,016	0,010	0,006	0,004	0,002	0,002	0,002	0,001	0,001	
29	0,749	0,563	0,321	0,185	0,107	0,063	0,037	0,022	0,017	0,014	0,008	0,005	0,003	0,002	0,002	0,001	0,001	0,001	
30	0,742	0,552	0,308	0,174	0,099	0,057	0,033	0,020	0,015	0,012	0,007	0,004	0,003	0,002	0,001	0,001	0,001		
40	0,672	0,453	0,208	0,097	0,046	0,022	0,011	0,005	0,004	0,003	0,001	0,001							
50	0,608	0,372	0,141	0,054	0,021	0,009	0,003	0,001	0,001	0,001									

TABLE B:
PRESENT VALUE OF R1 PER ANNUM RECEIVED/PAID AT THE END OF THE YEAR FOR N YEARS

Formula: $\left[\frac{1-\frac{1}{(1+i)^n}}{i}\right]$

Year N	1%	2%	4%	6%	8%	10%	12%	14%	15%	16%	18%	20%	22%	24%	25%	26%	28%	30%	35%
1	0,990	0,980	0,962	0,943	0,926	0,909	0,893	0,877	0,870	0,862	0,847	0,833	0,820	0,806	0,800	0,794	0,781	0,769	0,741
2	1,970	1,942	1,886	1,833	1,783	1,736	1,690	1,647	1,626	1,605	1,566	1,528	1,492	1,457	1,440	1,424	1,392	1,361	1,289
3	2,941	2,884	2,775	2,673	2,577	2,487	2,402	2,322	2,283	2,246	2,174	2,106	2,042	1,981	1,952	1,923	1,868	1,816	1,696
4	3,902	3,808	3,630	3,465	3,312	3,170	3,037	2,914	2,855	2,798	2,690	2,589	2,494	2,404	2,362	2,320	2,241	2,166	1,997
5	4,853	4,713	4,452	4,212	3,993	3,791	3,605	3,433	3,352	3,274	3,127	2,991	2,864	2,745	2,689	2,635	2,532	2,436	2,220
6	5,795	5,601	5,242	4,917	4,623	4,355	4,111	3,889	3,784	3,685	3,498	3,326	3,167	3,020	2,951	2,885	2,759	2,643	2,385
7	6,728	6,472	6,002	5,582	5,206	4,868	4,564	4,288	4,160	4,039	3,812	3,605	3,416	3,242	3,161	3,083	2,937	2,802	2,508
8	7,652	7,325	6,733	6,210	5,747	5,335	4,968	4,639	4,487	4,344	4,078	3,837	3,619	3,421	3,329	3,241	3,076	2,925	2,598
9	8,566	8,162	7,435	6,802	6,247	5,759	5,328	4,946	4,772	4,607	4,303	4,031	3,786	3,566	3,463	3,366	3,184	3,019	2,665
10	9,471	8,983	8,111	7,360	6,710	6,145	5,650	5,216	5,019	4,833	4,494	4,192	3,923	3,682	3,571	3,465	3,269	3,092	2,715
11	10,368	9,787	8,760	7,887	7,139	6,495	5,937	5,453	5,234	5,029	4,656	4,327	4,035	3,776	3,656	3,544	3,335	3,147	2,752
12	11,255	10,575	9,385	8,384	7,536	6,814	6,194	5,660	5,421	5,197	4,793	4,439	4,127	3,851	3,725	3,606	3,387	3,190	2,779
13	12,134	11,343	9,986	9,853	7,904	7,103	6,424	5,842	5,583	5,342	4,910	4,533	4,203	3,912	3,780	3,656	3,427	3,223	2,799
14	13,004	12,106	10,563	9,295	8,244	7,367	6,628	6,002	5,724	5,468	5,008	4,611	4,265	3,962	3,824	3,695	3,459	3,249	2,814
15	13,865	12,849	11,118	9,712	8,559	7,606	6,811	6,142	5,847	5,575	5,092	4,675	4,315	4,001	3,859	3,726	3,483	3,268	2,825
16	14,718	13,578	11,652	10,106	8,851	7,824	6,974	6,265	5,954	5,669	5,162	4,730	4,357	4,033	3,887	3,751	3,503	3,283	2,834
17	15,562	14,292	12,166	10,477	9,122	8,022	7,120	6,373	6,047	5,749	5,222	4,775	4,391	4,059	3,910	3,771	3,518	3,295	2,840
18	16,398	14,992	12,659	10,828	9,372	8,201	7,250	6,467	6,128	5,818	5,273	4,812	4,419	4,080	3,928	3,786	3,529	3,304	2,844
19	17,226	15,678	13,134	11,158	9,604	8,365	7,366	6,550	6,198	5,877	5,316	4,844	4,442	4,097	3,942	3,799	3,539	3,311	2,848
20	18,046	16,351	13,590	11,470	9,818	8,514	7,469	6,623	6,259	5,929	5,353	4,870	4,460	4,110	3,954	3,808	3,546	3,316	2,850
21	18,857	17,011	14,029	11,764	10,017	8,649	7,562	6,687	6,312	5,973	5,384	4,891	4,476	4,121	3,963	3,816	3,551	3,320	2,852
22	19,660	17,658	14,451	12,042	10,201	8,772	7,645	6,743	6,359	6,011	5,410	4,909	4,488	4,130	3,970	3,822	3,556	3,323	2,853
23	20,456	18,292	14,857	12,303	10,371	8,883	7,718	6,792	6,399	6,044	5,432	4,925	4,499	4,137	3,976	3,827	3,559	3,325	2,854
24	21,243	18,914	15,247	12,550	10,529	8,985	7,784	6,835	6,434	6,073	5,451	4,937	4,507	4,143	3,981	3,831	3,562	3,327	2,855
25	22,023	19,523	15,622	12,783	10,675	9,077	7,843	6,873	6,464	6,097	5,467	4,948	4,514	4,147	3,985	3,834	3,654	3,329	2,856
26	22,795	20,121	15,983	13,003	10,810	9,161	7,896	6,906	6,491	6,118	5,480	4,956	4,520	4,151	3,988	3,837	3,566	3,330	2,856
27	23,560	20,707	16,330	13,211	10,935	9,237	7,943	6,935	6,514	6,136	5,492	4,964	4,524	4,154	3,990	3,839	3,567	3,331	2,856
28	24,316	21,281	16,663	13,406	11,051	9,307	7,984	6,961	6,534	6,152	5,502	4,970	4,528	4,157	3,992	3,840	3,568	3,331	2,857
29	25,066	21,844	16,984	13,591	11,158	9,370	8,022	6,983	6,551	6,166	5,510	4,975	4,531	4,159	3,994	3,841	3,569	3,332	2,857
30	25,808	22,396	17,292	13,765	11,258	9,427	8,055	7,003	6,566	6,177	5,517	4,979	4,534	4,160	3,995	3,842	3,569	3,332	2,857
40	32,835	27,355	19,793	15,046	11,925	9,779	8,244	7,105	6,642	6,234	5,548	4,997	4,544	4,166	3,999	3,846	3,571	3,333	2,857
50	39,196	31,424	21,482	15,762	12,234	9,915	8,304	7,133	6,661	6,246	5,554	4,999	4,545	4,167	4,000	3,846	3,571	3,333	

If you need to use a factor for annuities due (paid in advance or at the beginning of the period):

1. Look up the factor for periods n + 1
2. **Then** add one (the PV of R1 invested now is R1). Or use the mathematical formula.

TABLE C
FUTURE VALUE OF R1 RECEIVED NOW, AFTER N YEARS

Formula: $(1 + i)^n$

Year N	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%	16%	18%	20%
1	1,0100	1,0200	1,0300	1,0400	1,0500	1,0600	1,0700	1,0800	1,0900	1,1000	1,1200	1,1400	1,1500	1,1600	1,1800	1,2000
2	1,0201	1,0404	1,0609	1,0816	1,1025	1,1236	1,1449	1,1664	1,1881	1,2100	1,2544	1,2996	1,3225	1,3456	1,3924	1,4400
3	1,0303	1,0612	1,0927	1,1249	1,1576	1,1910	1,2250	1,2597	1,2950	1,3310	1,4049	1,4815	1,5209	1,5609	1,6430	1,7280
4	1,0406	1,0824	1,1255	1,1699	1,2155	1,2625	1,3108	1,3605	1,4116	1,4641	1,5735	1,6890	1,7490	1,8106	1,9388	2,0736
5	1,0510	1,1041	1,1593	1,2167	1,2763	1,3382	1,4026	1,4693	1,5386	1,6105	1,7623	1,9254	2,0114	2,1003	2,2878	2,4883
6	1,0615	1,1262	1,1941	1,2653	1,3401	1,4185	1,5007	1,5869	1,6771	1,7716	1,9738	2,1950	2,3131	2,4364	2,6996	2,9860
7	1,0721	1,1487	1,2299	1,3159	1,4071	1,5036	1,6058	1,7138	1,8280	1,9487	2,2107	2,5023	2,6600	2,8262	3,1855	3,5832
8	1,0829	1,1717	1,2668	1,3686	1,4775	1,5938	1,7182	1,8509	1,9926	2,1436	2,4760	2,8526	3,0590	3,2784	3,7589	4,2998
9	1,0937	1,1951	1,3048	1,4233	1,5513	1,6895	1,8385	1,9990	2,1719	2,3579	2,7731	3,2519	3,5179	3,8030	4,4355	5,1598
10	1,1046	1,2190	1,3439	1,4802	1,6289	1,7908	1,9672	2,1589	2,3674	2,5937	3,1058	3,7072	4,0456	4,4114	5,2338	6,1917
11	1,1157	1,2434	1,3842	1,5395	1,7103	1,8983	2,1049	2,3316	2,5804	2,8531	3,4785	4,2262	4,6524	5,1173	6,1759	7,4301
12	1,1268	1,2682	1,4258	1,6010	1,7959	2,0122	2,2522	2,5182	2,8127	3,1384	3,8960	4,8179	5,3503	5,9360	7,2876	8,9161
13	1,1381	1,2936	1,4685	1,6651	1,8856	2,1329	2,4098	2,7196	3,0658	3,4523	4,3635	5,4924	6,1528	6,8858	8,5994	10,699
14	1,1495	1,3195	1,5126	1,7317	1,9799	2,2609	2,5785	2,9372	3,3417	3,7975	4,8871	6,2613	7,0757	7,9875	10,147	12,839
15	1,1610	1,3459	1,5580	1,8009	2,0789	2,3966	2,7590	3,1722	3,6425	4,1772	5,4736	7,1379	8,1371	9,2655	11,974	15,407
16	1,1726	1,3728	1,6047	1,8730	2,1829	2,5404	2,9522	3,4259	3,9703	4,5950	6,1304	8,1372	9,3576	10,748	14,129	18,488
17	1,1843	1,4002	1,6528	1,9479	2,2920	2,6928	3,1588	3,7000	4,3276	5,0545	6,8660	9,2765	10,761	12,468	16,672	22,186
18	1,1961	1,4282	1,7024	2,0258	2,4066	2,8543	3,3799	3,9960	4,7171	5,5599	7,6900	10,575	12,375	14,463	19,673	26,623
19	1,2081	1,4568	1,7535	2,1068	2,5270	3,0256	3,6165	4,3157	5,1417	6,1159	8,6128	12,056	14,232	16,777	23,214	31,948
20	1,2202	1,4859	1,8061	2,1911	2,6533	3,2071	3,8697	4,6610	5,6044	6,7275	9,6463	13,743	16,367	19,461	27,393	38,338
21	1,2324	1,5157	1,8603	2,2788	2,7860	3,3996	4,1406	5,0338	6,1088	7,4002	10,804	15,668	18,822	22,574	32,324	46,005
22	1,2447	1,5460	1,9161	2,3699	2,9253	3,6035	4,4304	5,4365	6,6586	8,1403	12,100	17,861	21,645	26,186	38,142	55,206
23	1,2572	1,5769	1,9736	2,4647	3,0715	3,8197	4,7405	5,8715	7,2579	8,9543	13,552	20,362	24,891	30,376	45,008	66,247
24	1,2697	1,6084	2,0328	2,5633	3,2251	4,0489	5,0724	6,3412	7,9111	9,8497	15,179	23,212	28,625	35,236	53,109	79,497
25	1,2824	1,6406	2,0938	2,6658	3,3864	4,2919	5,4274	6,8485	8,6231	10,835	17,000	26,462	32,919	40,874	62,669	95,396

TABLE D
FUTURE VALUE OF R1 PER ANNUM RECEIVED FOR N YEARS AT THE END OF EACH YEAR

Formula: $\frac{(1+i)^n - 1}{i}$

Year N	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%	16%	18%	20%
1	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
2	2,0100	2,0200	2,0300	2,0400	2,0500	2,0600	2,0700	2,0800	2,0900	2,1000	2,1200	2,1400	2,1500	2,1600	2,1800	2,2000
3	3,0301	3,0604	3,0909	3,1216	3,1525	3,1836	3,2149	3,2464	3,2781	3,3100	3,3744	3,4396	3,4725	3,5056	3,5724	3,6400
4	4,0604	4,1216	4,1836	4,2465	4,3101	4,3746	4,4399	4,5061	4,5731	4,6410	4,7793	4,9211	4,9934	5,0665	5,2154	5,3680
5	5,1010	5,2040	5,3091	5,4163	5,5256	5,6371	5,7507	5,8666	5,9847	6,1051	6,3528	6,6101	6,7424	6,8771	7,1542	7,4416
6	6,1520	6,3081	6,4684	6,6330	6,8019	6,9753	7,1533	7,3359	7,5233	7,7156	8,1152	8,5355	8,7537	8,9775	9,4420	9,9299
7	7,2135	7,4343	7,6625	7,8983	8,1420	8,3938	8,6540	8,9228	9,2004	9,4872	10,089	10,730	11,067	11,414	12,142	12,916
8	8,2857	8,5830	8,8923	9,2142	9,5491	9,8975	10,260	10,637	11,028	11,436	12,300	13,233	13,727	14,240	15,327	16,499
9	9,3685	9,7546	10,159	10,583	11,027	11,491	11,978	12,488	13,021	13,579	14,776	16,085	16,786	17,519	19,086	20,799
10	10,462	10,950	11,464	12,006	12,578	13,181	13,816	14,487	15,193	15,937	17,549	19,337	20,304	21,321	23,521	25,959
11	11,567	12,169	12,808	13,486	14,207	14,972	15,784	16,645	17,560	18,531	20,655	23,045	24,349	25,733	28,755	32,150
12	12,683	13,412	14,192	15,026	15,917	16,870	17,888	18,977	20,141	21,384	24,133	27,271	29,002	30,850	34,931	39,581
13	13,809	14,680	15,618	16,627	17,713	18,882	20,141	21,495	22,953	24,523	28,029	32,089	34,352	36,786	42,219	48,497
14	14,947	15,974	17,086	18,292	19,599	21,015	22,550	24,215	26,019	27,975	32,393	37,581	40,505	43,672	50,818	59,196
15	16,097	17,293	18,599	20,024	21,579	23,276	25,129	27,152	29,361	31,772	37,280	43,842	47,580	51,660	60,965	72,035
16	17,258	18,639	20,157	21,825	23,657	25,673	27,888	30,324	33,003	35,950	42,753	50,980	55,717	60,925	72,939	87,442
17	18,430	20,012	21,762	23,698	25,840	28,213	30,840	33,750	36,974	40,545	48,884	59,118	65,075	71,673	87,068	105,93
18	19,615	21,412	23,414	25,645	28,132	30,906	33,999	37,450	41,301	45,599	55,750	68,394	75,836	84,141	103,74	128,12
19	20,811	22,841	25,117	27,671	30,539	33,760	37,379	41,446	46,018	51,159	63,440	78,969	88,212	98,603	123,41	154,74
20	22,019	24,297	26,870	29,778	33,006	36,786	40,995	45,762	51,160	57,275	72,052	91,025	102,44	115,38	146,63	186,69
21	23,239	25,783	28,676	31,969	35,719	39,993	44,865	50,423	56,765	64,002	81,699	104,77	118,81	134,84	174,02	225,03
22	24,472	27,299	30,537	34,248	38,505	43,392	49,006	55,457	62,873	71,403	92,503	120,44	137,63	157,41	206,34	271,03
23	25,716	28,845	32,453	36,618	41,430	46,996	53,436	60,893	69,532	79,543	104,60	138,30	159,28	183,60	244,49	326,24
24	26,973	30,422	34,426	39,083	44,502	50,816	58,177	66,765	76,790	88,497	118,16	158,66	184,17	213,98	289,49	392,48
25	28,243	32,030	36,459	41,646	47,727	54,865	63,249	73,106	84,701	98,347	133,33	181,87	212,79	249,21	342,60	471,98

If you need to use a factor for annuities due (paid in advance or at the beginning of the period):

1. Look up the factor for periods n + 1 2. **Then** subtract ONE

Or look up factor for n and multiply with (1 + i)

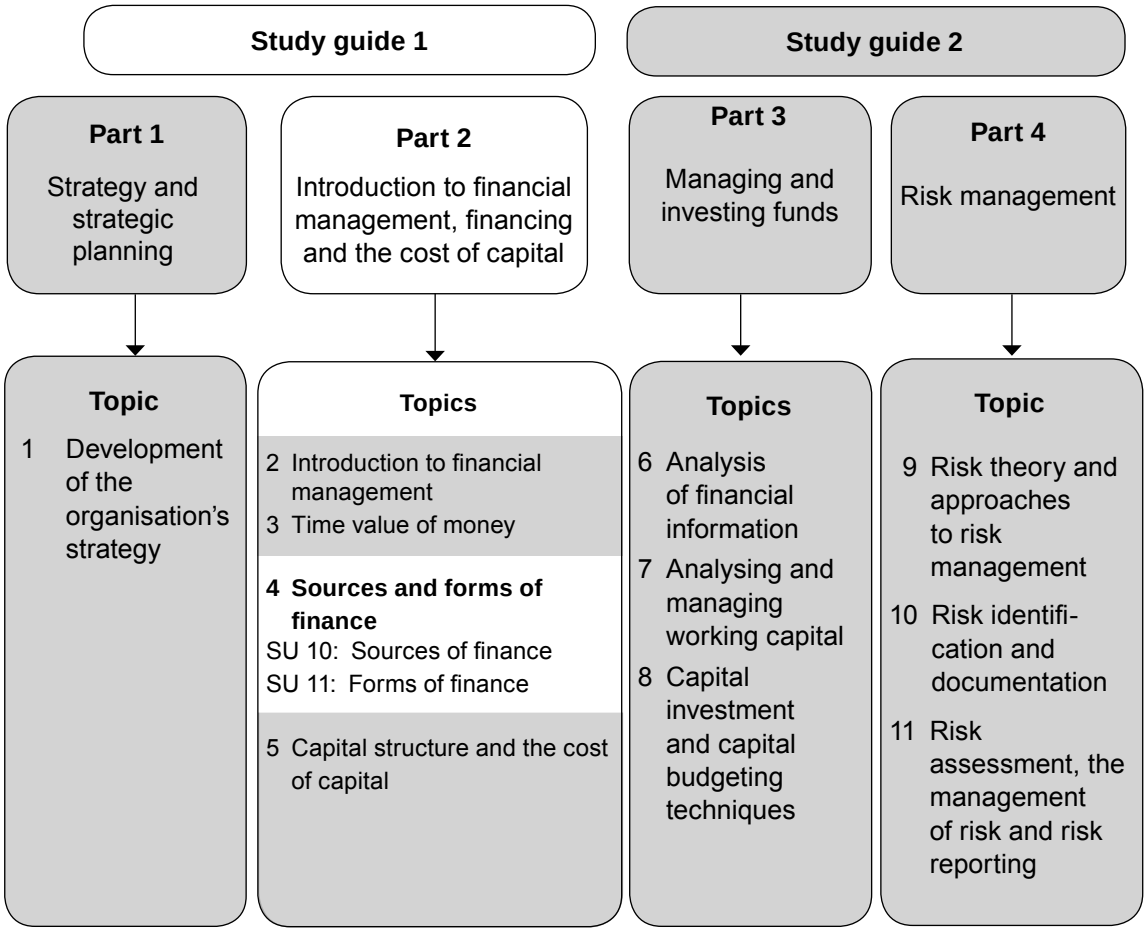
Or use the mathematical formula.

Sources and forms of finance

LEARNING OUTCOMES

After studying this topic, you should be able to:

- identify the main sources of financing
- explain the basic workings of capital and money markets
- identify possible financial markets
- explain the use of long- and short-term financing
- identify long- and short-term forms/options of finance
- identify the most appropriate financing instrument relating to equity or debt
- explain the characteristics, advantages and disadvantages of these instruments
- identify other forms of financing



INTRODUCTION

When we introduced you to financial management in topic 2, we explained the role of financial managers and gave specific attention to their role in financing and investment decisions in order to achieve the overall objective of financial management, namely creating long-term sustainable shareholder's wealth.

We will now discuss the sources and forms of finance that the entity's management can use when making financing decisions. The basic objective of these financing decisions is to obtain required funds from the appropriate market in the optimal mix between debt and equity as well as at the minimum cost. When financing decisions are made with these objectives in mind, the accountant will contribute to the creation of long-term sustainable shareholder's wealth.

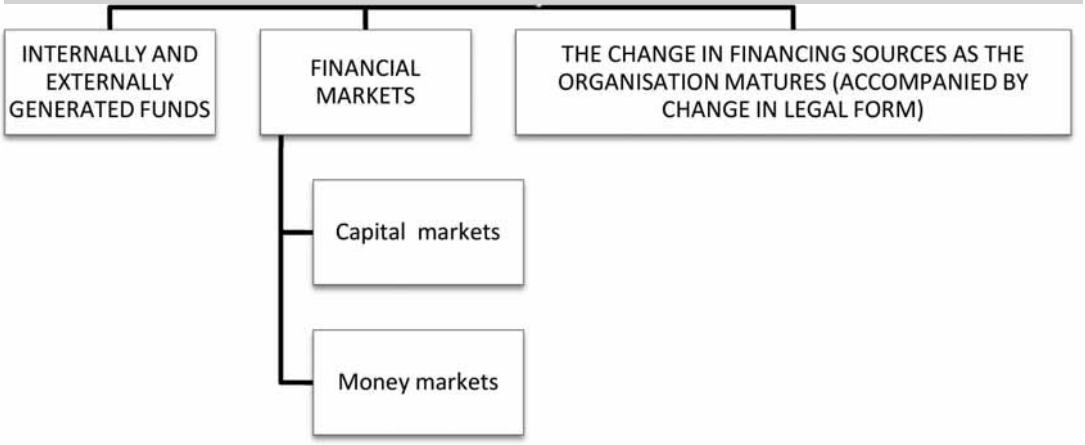
NOTE

The statutory aspects surrounding forms of finance, that is the Companies Act, the Close Corporations Act, King III, Listing Requirements and the Income Tax Act, will be dealt with in your Auditing and Taxation modules. We will not deal with detail aspects in this introductory topic.

STUDY UNIT 10

Sources of finance

In this study unit



1 Introduction

In this study unit, we will firstly identify possible financial markets (sources) where finance can be obtained. We will focus on capital and money markets and explain the basic workings of these two markets.

2 Background

All organisations need initial capital to start up with, which is required for purchasing the equipment, inventory, and so on. This is provided by the owners from:

- their own savings
- selling other investments
- increasing the bond on their fixed property
- retrenchment packages
- retirement lump sums

From your Financial Accounting (FAC) modules, you have learnt that these owner-provided funds are called equity or owners' interest (depending on the legal form of the business). If the initial owner-supplied funds were not enough, the owners would need additional financing from other sources. Similarly, when the entity wants to expand their operations by buying more equipment, opening additional branches or buying-out a competitor, they may need further financing.

We will discuss where this additional funding can be sourced from in more detail now.

3 Internally and externally generated funds

The financing function of an entity must raise funds in order to support the operations and investment programmes of the organisation.

An organisation can spend two kinds of money:

1. The first kind comes from **normal profits** (internally generated funds) which are the **day-to-day funds** used to support the organisation's **routine activities** (this is called **working capital or operating capital** which is discussed in detail in topic 7). For example, an organisation uses cash to purchase inventory. When the inventory is sold, the organisation receives cash or its debtors will increase if the inventory is sold on credit. When the debtors, who bought the inventory on credit, pay their accounts, the organisation will receive cash. At this point the cycle has been completed. The cash can then be used to purchase inventory again.
2. The second kind is **large amounts** that are **occasionally required** to get organisations **started** or to **support investment in major projects.** (This is discussed in detail in topic 8 dealing with capital investment and budgeting decisions.) These large amounts are raised **through financial markets** (externally generated) and are not wholly supported by operating funds. For example, an organisation needs money to change its current labour intensive production process to a capital-intensive process that uses new technology in order to stay competitive. In order to raise the necessary capital to fund this change, the organisation can offer new shares to the public.

Money can therefore be raised either internally or externally:

TABLE 10.1: Internal and external sources of funds

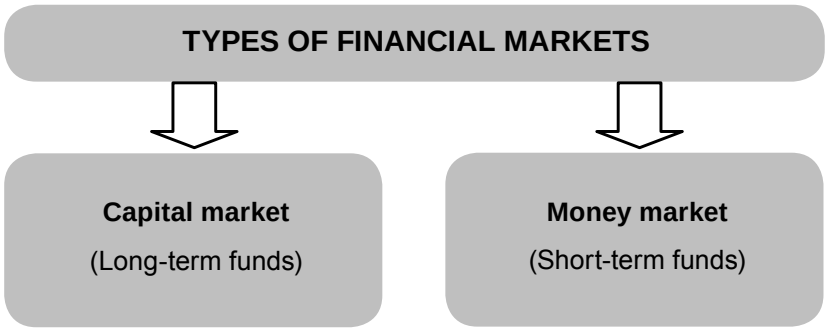
Raising money internally	• Most organisations raise money internally by retaining operating cash flows. This retained cash is saved and reinvested in the organisation on behalf of the organisation's owners/investors. This will support the growth of the organisation and support the organisation in its objective to create long-term sustainable wealth for its owners/investors
Raising money externally (financial markets)	• Debt financing is a method of raising money externally. This can be done by selling bonds/ debentures directly to investors or by borrowing money from commercial banks or other financial institutions or by borrowing from creditors. • Money raised externally can also be obtained from investors by selling an ownership interest. (Ownership interest can be a security such as ordinary shares, called equity, which is sold on the capital market).

A project is called “debt financed” if money is raised by borrowing. On the other hand, a project is called “equity financed” if money is raised from the sale of shares or from the organisation’s retained earnings.

4 Financial markets

Financial markets provide financing for organisations (demand) and turn the savings of investors (supply) into real investments. In practice, this means that organisations obtain funds from financial markets and then use it to finance operations and projects that are expected to be profitable. These profitable operations and projects will provide investors with better capital growth – a good return on their investment. Well-functioning financial markets therefore provide the rates of return that investors expect on their savings/investments.

Financial markets can be grouped as follows:



Source: Author, 2012

FIGURE 10.1: Types of financial markets

We will now discuss each market in more depth.

4.1 Capital (long-term) markets

CAPITAL

Capital is the money used to support or finance long-term (non-current) assets and projects and is displayed as equity (owners’ interest) and long-term debt on the statement of financial position.

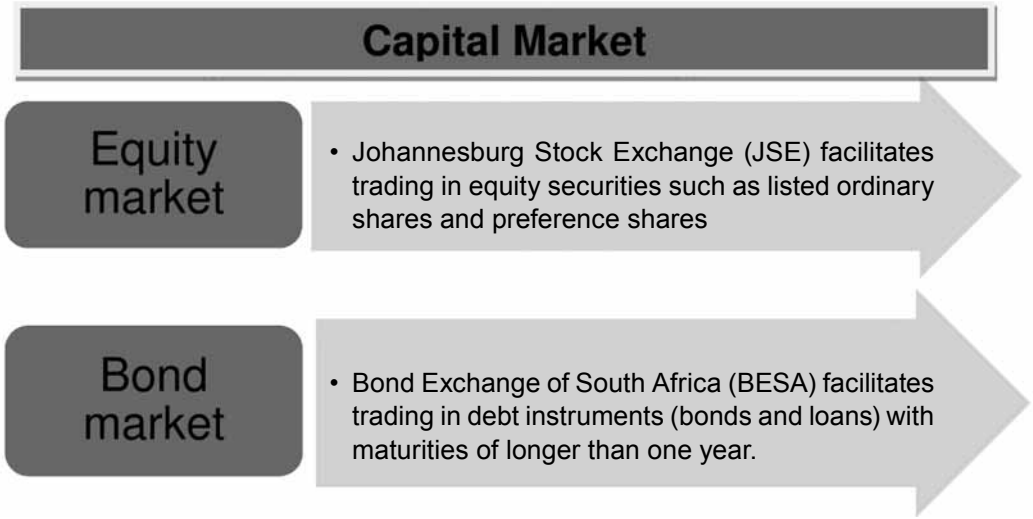
From the definition above, you will notice that capital is money or financing that is required for long periods (permanently). Main sources of capital (long-term financing sources) are equity, preference shares and debt.

CAPITAL MARKET

A capital market is a financial market in which equity and longer-term (longer than one year) debt securities are traded.

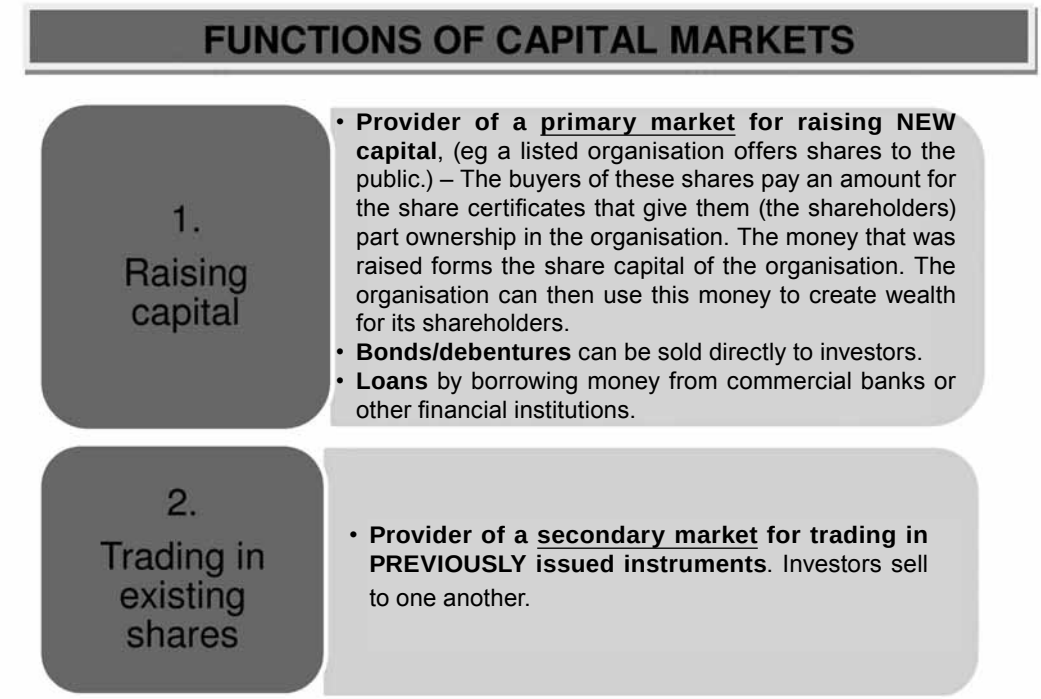
The definition of a capital market clearly indicates that it is a financial market for long-term financing instruments. Capital markets are also called securities markets and they trade in ordinary shares, preference shares and debt instruments (bonds and loans) that have terms of more than one year. Governments, large investors and organisations could borrow money for long-term activities or invest their surplus funds on the capital market. It is the market where the demand for and supply of long-term capital are met.

TABLE 10.2: The main divisions of the capital market



Two types of market transactions can be distinguished, namely primary market transactions and secondary market transactions. An explanation of each type is presented in the following table.

TABLE 10.3: The two main functions of capital markets



More information on the two types of market transactions is provided below.

TABLE 10.4: Types of market transactions

Primary market transactions	Secondary market transactions
• When equity and debt securities (such as bonds and long-term loans) are **initially sold** (floated) to investors, the capital is raised in a primary market transaction where **money flows from the investors to the organisation** and the organisation then invests the money to exploit investment opportunities such as expansion of the organisation or large capital projects.	• Holders of an organisation's securities can **subsequently sell these** equity **and debt securities to other investors**, resulting in a secondary market transaction. • The **majority of transactions** in the shares market are secondary and they do not generate cash for the organisation. • Management should nevertheless be aware of secondary share market transactions as it **sets the level of the organisation's share price** that will determine **how much can be raised by future issues** of shares. • It is also important that management is aware of the organisation's share price as **their compensation is often linked** to the share price of the organisation. • An **active secondary market** also makes an organisation's securities **more attractive to other investors**, thereby **increasing the price** of these securities.

Raising equity financing in the primary market takes two forms:

1. An Initial Public Offering (IPO) takes place when a company applies to be listed for the first time.
2. Subsequent shares can be listed for the first time to fund expansion projects.

NOTE

An IPO need not be viewed as simply a financial transaction. It should rather be viewed as a complex transformation from a private or unlisted public interest company to a publicly listed company. You will learn more about the workings of the capital markets as well as the JSE listing requirements in later MAC modules. It is sufficient to know at this stage that an organisation that wishes to be listed on the Main Board of the JSE should have:

- shareholders' equity of at least R25 million
- not less than 25 million equity shares
- a satisfactory audit report for the previous three years
- last audited profit before tax of at least R8 million

You can see from the above that only large, mature companies would be listed and obtain equity financing.

4.2 Money markets

MONEY MARKET

The money market is a financial market used mainly for raising short-term (of less than one year) finance.

The definition of the money market points out that it is a market for short-term financing. It is not confined to a specific location, such as the JSE and its subdivisions, but consists of large corporations and institutions such as merchant banks, commercial banks and non-bank financial institutions that borrow and lend amongst each other.

The money market is where the demand for and supply of short-term capital meets:

- For example, an organisation may need cash when it experiences a seasonal or short-term cash shortage due to a mismatch of payments and receipts of cash. A large amount of cash can for instance be required to pay suppliers (of inventory purchased previously). Funding may be needed to bridge the cash shortage until the inventory is sold and the cash received from debtors. (You will learn more about working capital management later on in this module.)

On the other hand, there may be investors and organisations that have surplus funds available for short periods. For example, another organisation has cash available since it is only supposed to pay its creditors in 60 days' time. Instead of keeping the cash in their bank account and earning a low interest rate thereon, the organisation can invest this surplus cash on the money market.

Provision of an organisation's short-term debt funding will typically take place through banks and other financial institutions, which will in turn trade the funds on the money market. The term money market includes the markets for trading in short-term inter-bank loans, short-term inter-company loans, short-term local authority debt instruments, bills of exchange, certificates of deposit and commercial paper. Money markets play an important role as it greatly influences the setting of interest rates for the rest of the economy.

Activity 10.1

Suppose you are the chief financial officer (CFO) of a large listed company. Which financial market would you access to obtain finance for large capital projects?

Feedback on activity 10.1

Since a large capital project needs

- a lot of capital
- over a number of years (long-term)

you will use the capital market to obtain financing for the project.

Activity 10.2

Suppose you are the CFO of Chicks Ltd. Which financial market would you use to obtain finance if the organisation does not have sufficient cash flow and cannot pay for certain operational transactions at month-end with its own funds?

Feedback on activity 10.2

Since the organisation needs the money for a short period, during which there is not enough cash flow to cover some of its operational cost, you will use the money market to obtain financing to cover operational costs.

5 Example – describing the change in financing sources as the organisation matures (accompanied by change in legal form)

In order to identify the most appropriate market as a potential source of finance, the size and stage of development of the organisation should be considered. Please refer to topic 2 again for a brief description of the different legal forms and the benefits/limitations of each. For illustration purposes, we will analyse the growth of a small neighbourhood business to a publicly listed company.

The ownership is initially entirely vested in the owner or sole proprietor (owner provided funds). If the owner wants to raise money for expansion, the sole proprietorship incorporates the business and becomes say, a private company – (Pty) Ltd. This legal form is also called a Limited Interest Company according to the new Companies Act, Act no 71 of 2008.

You will remember from topic 2 that it must have at least one shareholder and may not offer its shares to the general public. The owner of the private company therefore raises money for expansion by selling shares (a stake in the business) to other individual shareholders/ investors. The individual shareholders of the private company are usually also its directors and are closely involved in the running of the business. If the business plan for the expansion is acceptable, the business may also obtain bank loans. (You will learn more about compiling business plans in your third-year MAC module.)

As the organisation becomes even larger, an investment bank can also assist a large private company to obtain institutional investors (banks, retirement funds, asset managers, etc) by doing what is called a “private placement” of shares. Remember, at this stage the private company can still not sell shares to the general public! (Private placements are also done for large unlisted public companies.)

As the organisation continues to grow and more money is needed to pursue further growth opportunities, the owners need to raise the money by selling a substantial amount of shares to a large number of people. In order to do this, the private company has to complete the legal process to become a public company that can sell shares to the general public.

If the public company wants to change to a *listed* public company by completing an IPO, it needs the assistance of an investment bank. The bank will determine whether a market exists for the company’s shares as well as the likely price, at which a block of shares can be sold.

If the owner is satisfied with the estimated price, the investment bank starts to draw up a prospectus. This document supplies detailed information about the company's business and current financing. Since the purpose of the prospectus is disclosure, it has to inform all potential investors of the nature of the company and the risks involved. This must be done truly and accurately. If the company's success, for instance, depends on the granting of a patent or the success of a new technological process, these facts must be revealed in the prospectus. The prospectus has to be approved before the securities/shares that are described therein may be sold to the public.

The investment bank normally sources buyers, for example, institutional investors, before the securities are actually released and a percentage of the shares can be allotted to be marketed to individual small shareholders at the IPO stage.

The owner will normally retain a controlling share of the company's shares for himself. Since the IPO placed a value on the shares that have been sold, it would thereby have valued the shares that are still held by the owner. In the case of a successful IPO, the value at which the shares were valued, are greater than the carrying value thereof creating instant (unrealised) wealth for the owner. If a sufficient number of shares are taken up by the general public, the listing will be successful.

At this stage, the company is partly owned by the original owner(s) and the investors who purchased the shares through the IPO when the company went public. If any of these investors want to sell their shares, they have to do so through brokers and dealers who buy and sell shares on behalf of clients. For their hard work, they charge high commissions and fees to match buyers and sellers. The trading is facilitated by computers that match, bid and ask prices and volumes.

It is in the company's interest to make it easy for investors to trade in the secondary market (securities exchange), even if the company gains no monetary benefit from these trades. The reason is that, if there is an active market for the shares and they sell well due to the smooth operation of the secondary market, new issues of the company's shares will be easier to sell in the future when the company needs to raise more money in order to sustain growth.

A listed company can remain a listed company if the trading volume in the secondary market is high enough and if the company continues to meet the listing requirements of the JSE with regard to acceptable audit reports submitted on time, compliance with good corporate governance as recommended by King III, and so forth.

Enrichment activity 10.3

Go to the following website: http://www.fin24.com/Companies/ICT/Facebook-to-file-5-billion-IPO-20120201. Read the article "Facebook to file $5 billion IPO", as it is a good example of the extensive process required to become a listed public company with an initial public offering and some of the market reaction surrounding the announcement of the IPO.

Feedback on activity 10.3

The following *extract* from the case should provide you with some understanding of the large amounts of capital involved. Morgan Stanley is an investment bank

"Feb 01 2012 Reuters"

"New York – Facebook is expected to submit paperwork to regulators on Wednesday morning for a $5bn initial public offering and has selected Morgan Stanley and four other bookrunners to handle the mega-IPO, sources close to the deal told IFR.

The $5bn is a preliminary target and could be ramped up in coming months in response to investor demand, IFR added."

6 Summary

In this study unit, we discussed the main financial markets as sources of finance for an organisation, namely capital markets and money markets.

We defined capital and money markets and gave examples of each. The workings of capital and money markets were explained briefly as well as the functions of each. A distinction was made between raising money internally and externally as well as between primary and secondary market transactions.

We concluded with an illustration of how the most suitable market as potential source of finance changes based on the size and stage of development of an organisation. In the next study unit, we will identify different forms of finance that can be used to raise long-term and short-term capital.

Self-assessment activity

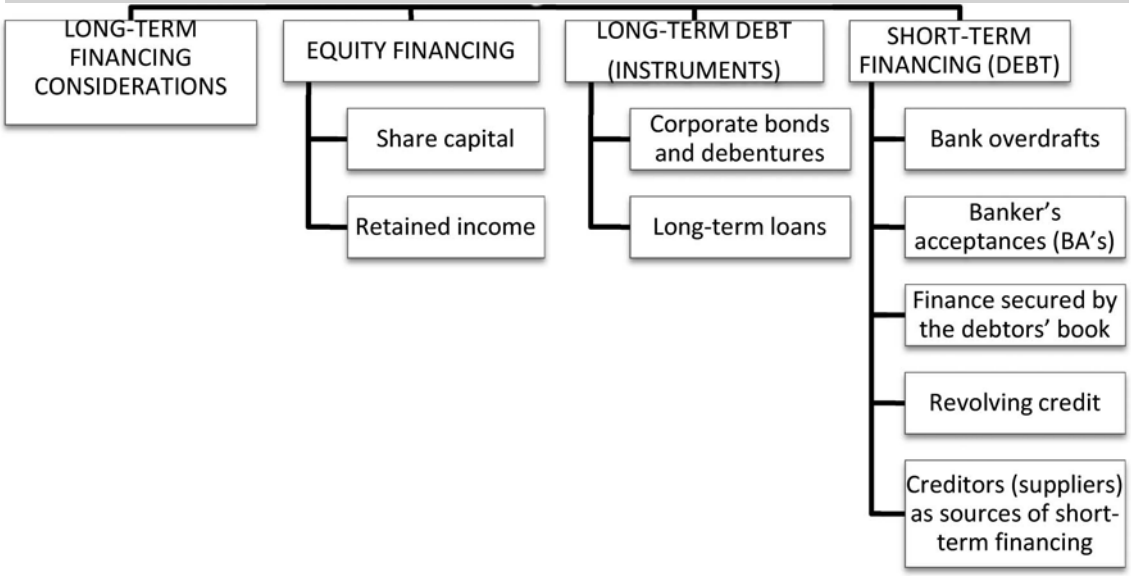
After having worked through this study unit, determine if you are able to answer the following questions:

a. Identify two financial markets as potential sources of finance.
b. Define what a capital market is and give an example of a capital market in South Africa.
c. Describe the two main functions of a capital market.
d. Name the two types of capital markets.
e. Define the money market and name the institutions that form part thereof.
f. Distinguish between money raised externally and money raised internally.
g. Explain what is meant by primary market transactions.
h. Explain what is meant by secondary market transactions.

STUDY UNIT 11

Forms of finance

In this study unit



1 Introduction

In the previous study unit, main sources of financing were described and examples presented thereof. A distinction was made between raising money internally and externally as well as between primary and secondary market transactions. We presented a brief explanation of the workings of capital and money markets as well as of the functions of each.

In this study unit, we will discuss different forms of long- and short-term financing and explain the use of different instruments.

2 Long-term financing considerations

As was mentioned in the previous study unit, long-term financing is used when acquiring long-term (non-current) assets. When an organisation needs to raise capital, it has two options – either equity or debt. The following should be considered:

1. Debt tends to have a finite life (it is repaid over time) whilst equity tends to be part of the organisation for life.
2. Equity holders control the organisation (have voting rights) while debt holders normally do not have control over the organisation. (They only have a measure of control in the case where the debt covenants give bondholders control.)
3. Dividends are not deductable for normal tax purposes as a business expense, whereas interest usually is.
4. In the case of liquidation, debt is repaid before equity. Equity holders therefore run the highest risk of their capital not being repaid. Ordinary shareholders are repaid last, if at all.

5. Due to the higher risk and the fact that dividends are not deductable for tax purposes, the return required by equity holders are higher than the interest charged by debt holders. Equity financing is therefore relatively more expensive than debt financing.

These issues are discussed in more detail in the next table.

TABLE 11.1: Debt versus equity financing

DEBT	EQUITY
Cost of debt (in the form of interest payments) are deductable from other taxable income, creating a cash saving (also called tax shield) for the company. This reduces the effective cost for the organisation paying interest.	Dividends (part of the required return of equity holders) are not deductable from other taxable income. The effective cost of equity is therefore higher.
Cost of debt is usually lower than the cost of equity because of the lower risk (capital repayment is more secure) to the lender.	Cost of equity may be high as shareholders expect higher returns on their investment in the shares than they could have earned elsewhere due to the risk they are taking (no guarantee the capital invested will be returned in case of liquidation or that it will grow).
The cost of obtaining some types of debt (eg long-term loans) is lower than issuing ordinary shares since there is no flotation cost involved.	The issuing of new listed shares is expensive due to flotation costs. Private placements of unlisted shares are also expensive due to the documentation and advisors' fees.
Debt requires capital repayment. The organisation must generate enough to pay the interest as well as the repayment of the capital. This can put strain on the liquidity of the organisation.	Ordinary share capital does not need to be repaid. It forms part of the organisation's permanent capital. No pressure will be placed on the organisation's liquidity when ordinary shares are issued.
The use of debt financing together with equity will reduce the overall average cost of capital of the organisation due to the leverage effect (you will learn about this in topic 5.) However, if too much debt is raised, the risk profile of the organisation will change. Finance providers will expect a greater return on their investment. This will be reflected in a higher average cost of capital. Raising too much debt can reduce the ability of the organisation to obtain more debt in the future.	One school of thought is that the raising of equity sends negative signals to investors as it may be perceived that the management is of the opinion that the organisation's shares are overvalued at current levels. This may result in a drop in the share price when the new issue is announced. On the other hand, it can be argued that the announcement of a new public issue to finance specific, well-motivated projects or expansions will improve the share price as it is indicative of managements' confidence in the business and that it can create wealth for the owners.

When deciding between financing through equity or debt, there is always the trade-off between risk and return. (The increase in risk is due to the interest payments that must be made on the debt regardless of whether there are profits or not, as well as the capital repayment.) This means that, as risk increases as result of a greater proportion of debt, an increase in return will be expected by equity holders. Debt providers themselves will also start to increase the interest rate and security required due to increased credit risk. You will learn more about this in topic 5 and later MAC modules.

3 Equity financing

Equity financing consists of share capital and retained income (internally generated funds).

3.1 Share capital

In order to reduce risk for shareholders and depending on the capital structure of the company at the time, shares can be packaged in different types for different risk categories of shareholders.

ORDINARY SHARE

A share is a security offered to investors that bestows ownership. Investors receive dividends as return on their investment as well as capital growth if the share price increases and they sell their shares.

ORDINARY PREFERENCE SHARE

An ordinary preference share is a security that pays a constant dividend into perpetuity (if not convertible or redeemable).

Table 11.2 describes the two main types of share capital (ordinary shares and ordinary preference shares) together with their main characteristics and Table 11.3 presents variations of ordinary preference shares with an explanation of the distinctions between the different types.

TABLE 11.2: Types of share capital

ORDINARY SHARES	ORDINARY PREFERENCE SHARES
– The **investors/ shareholders become the owners** of the organisation. – They have **voting rights** attached to each class of ordinary share. – Shareholders **receive dividends** as a return on their investment. This dividend can **fluctuate and is at the discretion** of the board of directors (subject to shareholders' approval). – As the share **price increase**, the shareholders also benefit. Their wealth therefore increases with both the dividend and **capital growth** of the share. – Ordinary shares are those shares that **bear the highest risk (repaid last in case of liquidation), but will gain the most benefit if the company shows growth**.	– Ordinary preference shares are a **hybrid form of financin**g. This means that it has a combination of characteristics of both equity and debt. It is a share, but its **dividend is expressed as a fixed percentage** of the capital amount. – The **dividend** for **ordinary preference** shares **can be passed**, if the company have insufficient cash. – The ordinary preference share is an example of a type of share with **less risk to the investor than ordinary shares**. In case of liquidation, preference shares are repaid from remaining funds **before ordinary shares**. – The preference shares are **non-redeemable** (unless stated otherwise). They are never repaid, unless liquidation occurs. The par value is classified as equity. – In the **case of arrear** cumulative preference dividends, the preference shareholders are **granted voting rights** that will give them a measure of control over the organisation.

TABLE 11.3: Variations of ordinary preference shares

Redeemable preference shares	– This type of preference shares are **issued with a redemption date**. – They differ from ordinary/normal preference shares in that it has to be **redeemed at a fixed maturity date**. Since it is redeemable, it is classified as debt instead of equity. – Eg "redeemable at 1 March 20x4" **or over a given period of time** (longer than three (3) years).
Convertible preference shares	– This preference shares are convertible and can be **exchanged for another financial asset, such as ordinary shares or debentures**, after a specific time or at a specific future date. Since it can be converted to ordinary shares, it is classified as equity instead of debt. – Eg, "15% convertible preference shares at R1 each, convertible into ordinary shares at 28 February 20x5 in the ratio of 1:1".
Participating preference shares	– Preference shares may also have the right to **participate in the ordinary dividends, bonuses or rights that are usually associated with ordinary shares**. These preference shares are therefore called participating preference shares. – The right to share in ordinary dividends usually entails **sharing if and when the dividend per ordinary share exceeds a certain amount.**

NOTE

Preference shares' dividends are not cumulative, unless so specified. This can apply to ordinary or any other type of preference share. If so specified, it means that **dividends that have not been paid** to preference shareholders due to the organisation having insufficient cash available in a period, will **accumulate** and be paid in future years. This cumulative preference dividend needs to be paid BEFORE any ordinary dividend can be declared and paid.

From 1 April 2012, Secondary Tax on Companies (STC) is replaced by Withholding Tax on Dividends. This is an income tax on local dividend payments to the investor, therefore **a tax due by shareholders**. The company that issued the shares do not pay tax on the dividends that were declared and paid but they withhold the tax due by shareholders and pay it over to the South African Revenue Services (SARS). The tax rate on the local dividend payment is 15% unless exemption has been received from SARS. According to the Income Tax Act, the following organisations are exempt (as receivers of the dividend):

- a company that is resident in South Africa
- the government, provincial government or municipality (of the Republic of South Africa)
- a public benefit organisation

NOTE

① You will learn more about taxation in your taxation modules.

② You should always make sure that you consult the latest applicable tax legislation as changes to the above dates or rates may be implemented.

- **Advantages to the organisation by issuing ordinary preference shares:**

1. An increase of the amount of ordinary preference shares (that is classified as equity) in the statement of financial position will reduce actual financial leverage, without bringing about dilution for the ordinary shareholders.
2. The control of the organisation will also not be affected (no dilution) when preference shares are issued as they have no voting rights (unless preference dividends are in arrears).

FINANCIAL LEVERAGE

Financial leverage is the extent to which debt and redeemable preference shares are used in the capital structure of an organisation. (An organisation that has a high percentage of debt and redeemable preference shares in its capital structure will be regarded as having a high degree of financial leverage).

DILUTION

Dilution occurs when new ordinary shares are issued or convertible securities converted to ordinary shares. The existing shareholders must then share the control of the organisation with more voting shareholders. The control (voting power) that the existing shareholders had over the organisation will therefore be diluted due to the increase in the number of shareholders.

Activity 11.1

Win-it Ltd had 1 000 shares in issue. The total market value of the existing shares was R100 000. Win-it then issued 100 new shares to new investors at R100 each for a total of R10 000.

Do you think that the control of the original shareholders will be affected by the selling of new shares?

Feedback on activity 11.1

$$= \left[\frac{\text{Original number of shareholders}}{\text{Original number of shares}}\right] \times \left[\frac{100}{1}\right]$$

$$= \left[\frac{1000}{1000}\right] \times \left[\frac{100}{1}\right]$$

= 100% shareholding by original shareholders

$$= \left[\frac{\text{Original number of shareholders}}{\text{Original number of shares} + \text{number of new shares}}\right] \times \left[\frac{100}{1}\right]$$

$$= \left[\frac{1\,000}{1\,000+100}\right] \times \left[\frac{100}{1}\right]$$

$$= \left[\frac{1\,000}{1100}\right] \times \left[\frac{100}{1}\right]$$

= 90,91% shareholding by original shareholders

The percentage control of the original shareholders has been diluted to 90,91% due to the issue of new shares. Control is an important issue for the controlling shareholders of a company when they consider new sources of finance.

3.2 Retained income

An organisation can also generate its own equity finance by deciding to retain a part of the profits each year. The result will be that only a part of the profit is distributed to owners in the form of dividends or drawings (if the legal form is not a company). Of importance, regarding this form of financing, is the extent of the retention. This will influence the decision on the size of the dividend that the organisation will pay. The CFO will carefully have to consider both decisions – whether to finance projects with retained profit (internally generated cash) as well as the size of dividends to be paid.

The issues which the financial manager will have to deal with, are the following:

- When an organisation has many potentially profitable projects, a decision has to be made whether to retain the funds to finance these projects instead of paying out the cash as a dividend distribution. If the cash is distributed as dividends, the organisation will need to raise additional finance (possibly at greater cost) in order to fund these profitable projects.
- It is however true that failure to pay dividends may cause the share price to decrease. This will happen because, if no dividends are paid, the shareholders will not receive their expected return on their investment. They will most probably sell their shares in order to invest in another organisation. The share price will decrease due to the oversupply of the shares on the market.

4 Long-term debt (Debt-related instruments)

Another way in which an organisation can raise long-term capital in the capital market is by issuing debt. Some of the different types of debt available on the capital market in South Africa are corporate bonds, debentures and long-term loans.

4.1 Corporate bonds and debentures

BOND/DEBENTURE

A bond/debenture is a long-term contract between the organisation that issues the bond/debenture (issuer or borrower), and the buyer thereof (lender of the money or investor). The main terms of this contract are the repayment conditions, security (if any) and the interest rate (called coupon rate) to be paid.

NOTE

Although corporate bonds are issued by large listed companies and debentures are mainly issued by finance companies, we will use the terms corporate bonds and debentures interchangeably in the rest of this study guide.

A company may issue bonds (or debentures) through a private placement with financial institutions or list a public issue on the bond exchange division of the JSE. There is therefore more than one lender/buyer per bond/debenture issue.

CREDIT RATING AGENCY

A credit rating agency is an organisation that provides international financial research on bonds and other debt instruments issued by business and government organisations. The agency ranks the creditworthiness of borrowers/issuers by using a standardised ratings scale. The payment history as well as financial heath (ability to pay future obligations) is taken into account in determining the credit rating.

NOTE

Moody's, Standard & Poor's and Fitch are considered the three largest credit ratings agencies. For example, Standard & Poor's ratings system assigns a rating from AAA to C. AAA presents the highest quality and lowest credit risk and C the lowest quality, usually in default with a low likelihood of recovering principal or interest.

- **Corporate bonds**: These bonds are not normally secured, but rated by a credit rating agency such as Moody's, Fitch IBCA or Standard and Poor's. The bonds of companies with a high credit rating are considered a low risk investment that attracts investors such as large pension funds. Low risk investments such as bonds of companies with

high credit ratings have lower interest rates since investors do not expect a higher return in order to compensate for the risk of their investment.

Public issues (issuing bonds directly to the capital market) have become popular due to demand factors and the current (2012) low interest rates. The benefit of the lower interest rate on bonds lies therein that the lower cost of debt reduces the company's cost of capital.

- **Debentures**: A contract exists between the issuers of debentures and the investors. This contract usually has a restrictive agreement that restricts the freedom of the management regarding the running of the organisation. Usually this restrictive clause controls the risk to which management may expose the organisation. It may for instance restrict the organisation from raising further loans.

  A debenture trust deed controls the terms and conditions of the contract. This trust deed is a contract between the issuing organisation and the trustees. This means that the trustees are the representatives of the debenture holders and their duty is to ensure the protection of the rights of debenture holders.

Bonds/debentures are usually issued at a fixed interest rate but this is not a requirement.

Bonds/debentures can be secured in terms of certain assets or be unsecured. When it is secured over a specific asset and the issuing organisation fails to pay (default on) interest or capital payments, the debenture holders can force the sale of the assets that were offered as security.

Bonds/debentures can be straight or convertible. Convertible bonds permit the bondholder (buyer/investor) to convert it into ordinary shares at a fixed price. Investors can therefore choose whether they want to keep the organisation's bond or change it to ordinary shares. Investors will take uncertainty and risk as well as the current price of the ordinary shares into account before making the choice to convert.

A conversion ratio is stated, defining the number of shares to be received at conversion, for example, a conversion ratio of 20 means that a bond can be exchanged for 20 ordinary shares. The conversion price is the price that is effectively paid per ordinary share by converting the bond into ordinary shares.

Activity 11.2

A R1 000 convertible bond with a conversion rate of 20 can be converted into 20 ordinary shares. (The bondholder has the choice at maturity date to receive the R1 000 or to convert (exchange) it to 20 ordinary shares.) The conversion price that is effectively paid per ordinary share will be R50 (R1 000 ÷ 20). At what price will it benefit the holder of the bond to convert it to ordinary shares (ignoring conversion costs).

Feedback on activity 11.2

When the market value of the specific ordinary shares rises above R50 each, the bondholder will benefit by converting to ordinary shares at an implied cost of R50 per share.

- **Advantages to the organisation of issuing corporate bonds/debentures**

Because corporate bonds/debentures present a lower risk to the lenders/investors (credit rated by agencies, security provided, debt covenants, risk spread between many investors), they require a lower return thereon. The issuance of corporate bonds therefore reduces an organisation's cost of debt financing and therefore the organisation's cost of capital.

4.2 Long-term loans

Bonds and debentures entail that there are many lenders of money to the organisation. As opposed thereto, long-term loans are normally negotiated directly between the borrowing organisation and a financial institution, for example, a bank, insurance company or pension fund (one lender). This is the reason it is often referred to as private debt. All the risk is borne by the single lender.

MORTGAGE LOAN

Mortgage loans are long-term loans raised against the value of property. The loan is normally secured over the value of the property offered as security.

The amount that can be raised will mainly depend on the purpose for which the loan is raised and the value of the property.

SALE AND LEASEBACK

Trading organisations who own fixed property at times find it more rewarding to sell the properties to a financial institution at a capital profit. A leaseback agreement for a reasonably long term is then entered into immediately to protect the trading organisation (which operates from this premises) – the period can sometimes be as long as 30 years.

Consequently, the working capital position of the organisation improves materially due to an immediate cash injection. (This is the equivalent of taking out a mortgage on the property.) The statement of financial position structure will now reflect a corresponding increase in a long-term debt obligation (the lease).

There is also a material disadvantage in that the possibility of capital appreciation in the value of the property is now forfeited to the new legal owner of the property.

The total effective cost connected with this financing may possibly be higher than financing the fixed asset by issuing corporate bonds.

BANK LOANS (TERM LOAN OR LINE OF CREDIT)

The loan may be a term loan (all the money advanced upfront and repayable over a fixed period) that relates to the specific financing requirement or the loan can be structured in the form of a line of credit (LOC) loan facility from which the company draws down as needed (the money is only advanced by the bank when the client needs it to make a payment to a supplier, etc) up to the maximum loan amount approved. The costs involved (apart from the repayment of the capital amount) are interest charges as well as a charge for the right to use the loan facility.

Medium and smaller companies mainly use bank loans for long-term financing. Key issues regarding bank loans are the interest rate charged (variable or fixed), period and timing of capital repayment and whether it is a loan or drawdown facility.

INSTALMENT SALE AGREEMENT (ISA)

An instalment sale agreement entails the granting of a loan to an organisation (buyer) by the supplier (seller) of assets such as machinery, equipment and vehicles itself (supplier credit), or granted by banks. The conditions, interest rate, instalment amount and frequency of payment as well as the period of the agreement are set out in the specific contract.

LEASE

A lease is a form of financing movable assets. Just like a loan, it can be structured in various ways. The lessor (granting the lease) remains the owner of the asset, while the lessee has the use of the asset. Lease payments are determined in such a way as to offer the lessor the cost of the asset plus a reasonable return thereon.

NOTE

You will learn more about the accounting treatment of Sale and Leaseback agreements, ISA and Leases in your Financial Accounting modules. IFRS prescribes how (where) these debt instruments (and related assets) are disclosed on the statement of financial position. The taxation treatment of the different financing options will be explained in detail in your Taxation modules. Later on in your MAC modules, you will learn more about how to make the optimal choice between these debt instruments to finance long-term assets.

- **Advantages to the organisation of using specific types of long-term loans:**

The cost of the different types of loans available to finance specific assets (projects) must firstly be calculated before a decision can be made on the type (mortgage loan, bank loan, instalment sale agreement or lease) that will have the lowest cost. When debt finance is obtained at the lowest cost, an organisation's cost of debt financing is reduced and therefore the organisation's cost of capital will be less. You will learn more about the cost of capital in topic 5.

5 Short-term financing (debt)

Organisations may experience the need for short-term financing due to the seasonal or cyclical nature of their operations. This is where money markets play an essential role in financing these short-term needs. There is no physical money market at a specific location; it consists of banks and financial institutions, which brings the supply and demand parties of short-term finance together.

Types of short-term debt instruments are bank overdrafts, banker's acceptances, debtor finance and revolving credit.

5.1 Bank overdrafts

BANK OVERDRAFT

A bank overdraft is the facility that allows an organisation to use more money than is available in its bank account.

The purpose of an overdraft is to serve as bridging finance to tide the organisation through its working capital cycle (explained in detail in topic 7). It is therefore a form of financing debt that is used to cover a temporary cash shortfall.

An overdraft is regarded as a short-term loan from a bank with a specified upper limit and interest is only paid on the money actually borrowed at any point in time. As the organisation receives funds, it is paid into the bank account and the overdraft decreases automatically.

Bank overdrafts are generally renegotiated annually but can be recalled on demand by the bank.

5.2 Banker's acceptances (BA's)

BANKER'S ACCEPTANCES

A banker's acceptance is created when the organisation sells a bill of exchange to the bank.

This bill of exchange should be paid/settled on a predetermined date, say 60 days later. The organisation (issuer) is committed to use the full amount for the agreed period, until maturity date. Although BA's are not as flexible as bank overdrafts, it normally cost less.

5.3 Finance secured by the debtors' book

It is possible that banks will provide short-term financing to an organisation against the security of the organisation's debtors. The amount of financing provided can be up to 75% of the value of the organisation's debtors.

FACTORING

Factoring is a form of debtors financing which results in improving the debtors' collection period. Instead of waiting for the debtors to pay, the factor will pay the agreed percentage of approved sales up front to the organisation. This is treated the same as an advance and is paid back to the factor at the end of the month. The process repeats for the new month.

A factoring agreement is drawn up and is described as a continuous agreement whereby the factor is compelled to take over (to buy) all approved claims of the organisation at the moment when the debt arises, with or without any possibility of recovery ("recourse") from the organisation which has sold these claims, depending on the terms of the agreement. In some cases, the factor would also take over the management of the organisation's debtors' book (function) against payment of a monthly fee.

The disadvantage of factoring is that it is a very expensive form of financing and it is recommended to be used only as a last resort.

5.4 Revolving credit

Normally an organisation must make fixed monthly payments on the credit agreement that it has with its credit provider.

REVOLVING CREDIT

Revolving credit allows the organisation to withdraw money up to the original credit limit (facility) once a certain percentage (20% to 30%) has been repaid and/or excess cash can be paid into the account and withdrawn again later when needed.

An example of revolving credit is the "access bond" that is provided by most commercial banks.

NOTE

Depending on the original debt agreement to which the revolving credit clause is added, this might also be classified as long-term debt. However, when it is used in the place of a money market instrument for investing excess cash, it should be short-term.

5.5 Creditors (suppliers) as sources of short-term financing

The greater part of the current assets of an organisation comprises goods that were bought from suppliers. Not all suppliers require immediate payment for these goods. Suppliers that offer credit terms to the organisation to which it sells their goods, become their creditors. The extent to which the suppliers offer credit terms (trade credit) will determine the creditors' contribution to the financing of working capital.

Trade creditors are a spontaneous form of financing, because it arises from ordinary business transactions and is regarded as having no cost associated with it. However, when settlement discount is offered by creditors for early payment, this discount presents an opportunity cost if it is foregone. It is also logical that a supplier that offers extended credit builds a cost for this extended credit into the pricing structure of the goods or services. (The working of trade credit will be discussed in detail in part 3, dealing with managing funds.)

Activity 11.3

The CEO of Ndobele Ltd, a medium-sized, non-listed organisation, asked you as CFO to recommend appropriate instruments to finance a long-term project that was identified as profitable. The project will require new machinery. The company has a very low debt ratio and has decided to finance the project with debt financing.

You have identified the following possible forms of finance for consideration: corporate bonds, debentures, bank loan, bank overdraft, banker's acceptance, debtor finance (factoring), revolving credit, creditors, instalment sale agreement, lease or sale and leaseback.

REQUIRED

List all the debt instruments available with a recommendation to use or not, as well as a motivation for your recommendation as being an appropriate/ inappropriate instrument.

Feedback on activity 11.3

Your recommendation should be presented as follows:

Corporate bonds	Not recommended, as an organisation needs a strong credit rating by a credit rating agency in order to issue corporate bonds. Only large listed organisations obtain corporate bonds by private placement with financial institutions or by making a public offering.
Debentures	Not recommended, as debentures may have a restrictive agreement that restricts the organisation from obtaining further loans for other projects.
Bank loan	**Recommended,** as it is repayable over a fixed period that relates to the specific financing requirement.
Bank overdraft	Not recommended, as an overdraft is normally only used to serve as bridging finance.
Banker's acceptance	Not recommended, as a banker's acceptance should be paid on a predetermined date, normally 60 days later and are therefore only suitable for short-term projects.
Debtor finance (factoring)	Not recommended, as debtors credit is short term financing to an organisation against the security of the organisation's debtors and therefore only suitable for short-term projects.
Revolving credit	Not recommended, as it is normally only applied to some home loans or short-term loans.
Creditors	Not recommended, as trade credit is used to manage working capital and not to finance long-term projects.
Instalment sale agreement	**Recommended**, as it is repayable over a fixed period that relates to the specific financing requirement.
Lease	**Recommended**, as a lease is a form of financing movable assets.
Sale and leaseback	Not recommended, as it is normally only used with regard to fixed property.

6 Summary

In this study unit, we discussed the role of long- and short-term financing. Two categories of financing, namely equity and debt, were highlighted. The instruments available for each of these two categories were listed. The main characteristics, advantages and disadvantages

of the categories as well as their respective financing instruments were briefly highlighted in order to identify the most suitable form of financing.

Self-assessment activity

After having worked through this study unit, determine if you are able to answer the following questions:

a. List the two main categories of long-term financing.
b. List the types of equity financing.
c. Explain the advantages and disadvantages of financing through the issuing of ordinary shares.
d. Distinguish between redeemable and convertible preference shares.
e. List the advantages of issuing preference shares.
f. List types of long-term debt that can be used to obtain finance.
g. Compare financing by means of debt to financing by means of equity.
h. List the kinds of short-term debt instruments that can be obtained on the money market to supply in the short-term financial needs of an organisation.

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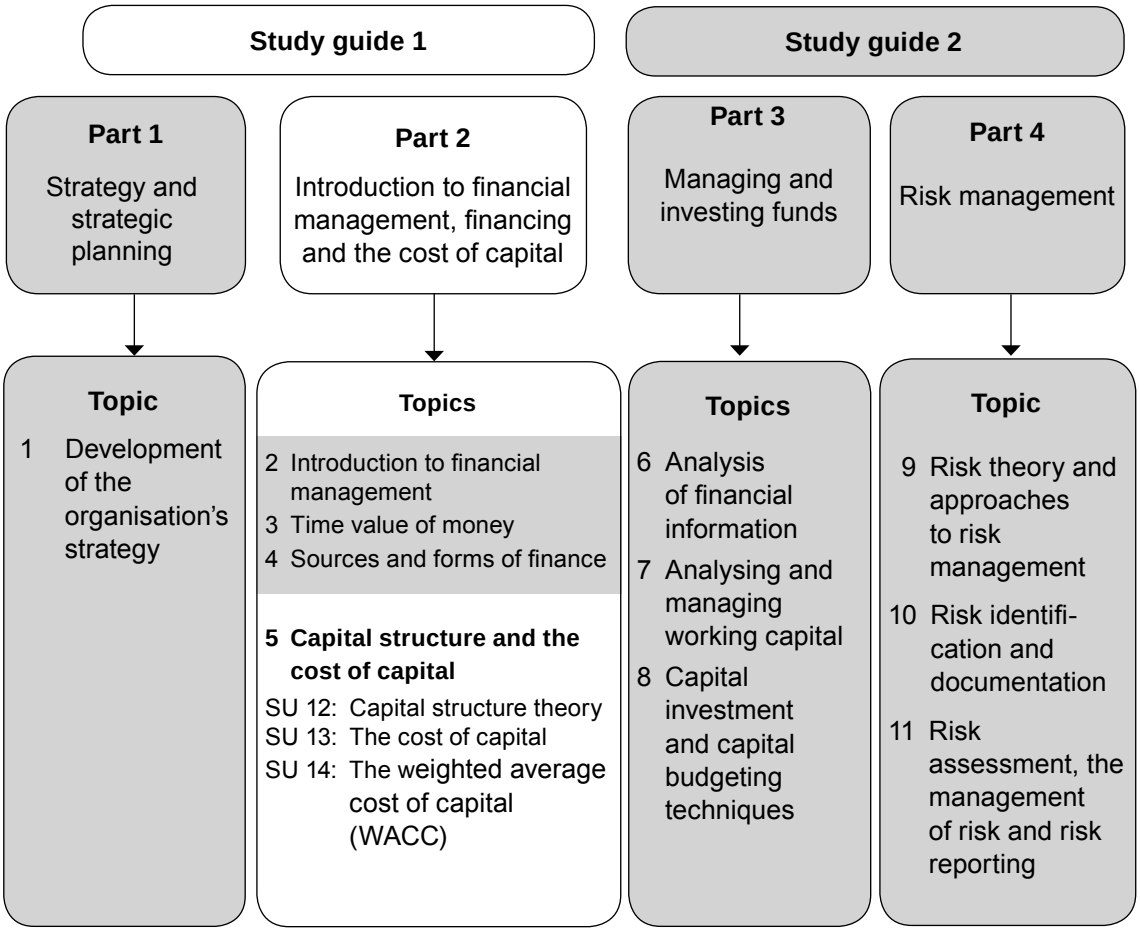
Capital structure and the cost of capital

LEARNING OUTCOMES

After studying this topic, you should be able to:

- explain the theory of capital structure and the target capital structure
- analyse the capital structure of an organisation
- explain the concept "cost of capital"
- identify risk factors that can affect the cost of selected forms of financing
- calculate the effective cost of different forms of financing
- perform elementary valuations of certain forms of financing
- calculate the weighted average cost of capital



INTRODUCTION

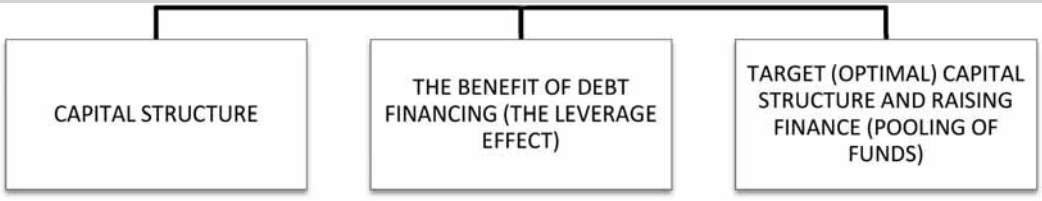
In the previous topics, you have learnt about the basic objective of financing decisions, namely to obtain financing from the appropriate market at the minimum cost. You have also learned about the various sources and forms of financing that can be accessed for financing and what the benefits and drawbacks of each are. In this topic, you will learn that financing should also be obtained in the optimal mix between equity and debt in order to lower the overall average cost of financing for the organisation.

The theory of capital structure will be explained, as the optimal capital structure is important in achieving the key objective of a company, that is, maximising the long-term sustainable wealth of the owners/investors. You will also learn how to calculate the effective cost of the different forms of finance and how to calculate the WACC.

STUDY UNIT 12

Capital structure theory

In this study unit



1 Introduction

In the previous topic, we discussed capital and money markets as sources of finance as well as the different forms of finance available for long-term and short-term financing. We explained the importance of financing being obtained at a minimum cost. Due to the difference in cost of the various forms of finance, obtaining finance in the right proportions from the different sources is a very relevant issue.

2 Capital structure

We already explained that long-term assets/expansion need to be financed by long-term funds, as the cash to repay the financiers would only be generated over the long-term by these assets. It follows then that large amounts of money (capital) that are needed for use over the long-term to finance the infrastructure of the business, large projects or expansion of an organisation, are raised through the capital (equity and bond) markets. A project is debt financed if the money was raised by borrowing (issuing debt in the form of bonds/ debentures or obtaining long-term loans) and equity financed if the money was raised from the sale of shares or from the organisation's retained earnings.

CAPITAL STRUCTURE

Capital structure is the manner in which an organisation's non-current assets are financed. Capital structure is normally expressed in percentages of each type of capital used by the organisation, that is, the proportion of debt versus equity.

You have learned that the following forms of long-term financing are available:

- **Debt** is borrowed money, raised through loans or the sale/issue of bonds/debentures. Periodic interest is incurred and the capital is repaid over the term (eg a long-term loan) or at the end of the term (eg bonds/debentures). These forms of financing will form the debt part of the capital structure of the organisation. A convertible (to equity) debenture is a hybrid and is classified in parts between equity and debt, depending on the terms of issue.

- **Equity** is money raised from the sale/issue of ordinary shares or from retained earnings. New shares can be offered to the market in general, or as a rights issue, only to existing shareholders (thereby not diluting their percentage shareholding). This forms the equity part of the capital structure.
- **Preference shares** can be viewed as a cross (hybrid) between debt and equity since it has characteristics of both. It is classified as either equity or debt, depending on the terms of issue (redeemable/convertible/guaranteed dividends and so forth).

NOTE

The classification of hybrid instruments, such as convertible and non-redeemable debentures, and all types of preference shares as either equity or debt (and in some cases even a bit of both) is beyond the scope of MAC2602. You will learn more about this classification and the International Financial Reporting Standards' (IFRS) requirements in this regard in your later Financial Accounting and MAC modules.

In the rest of this topic, we will exclude preference shares from the capital structure and assume all debentures are redeemable and non-convertible. It is sufficient at this stage for you to know that the principles of this topic will apply to the hybrid instruments, based on their final classification.

Key formula: DEBT:EQUITY RATIO (D:E) (SIMPLIFIED)

Debt:Equity ratio = all forms of long-term debt:all forms of equity

NOTE

This is a simplified formula. Multiple variations on this formula include or exclude certain items to measure specific aspects of the funding structure of the organisation. You will learn more about advanced debt:equity ratios in your later MAC modules. Later on in this module (topic 6 – ratio analysis) you will learn more about *other* formulas (except debt:equity) that are also used to provide information to assist in managing the organisation!

The capital structure of an organisation entails the mix of equity and long-term debt (the components) that an organisation employs to finance its long-term investments/ operations. The mix determines which percentage of the organisation's cash flow is attributable to owners/investors and which percentage is attributable to lenders. The mix of equity and long-term debt of an organisation will affect both the risk and the value of the organisation.

Example:

The following information relates to Mahlangu Ltd.

	R (Initial)	%
Equity	60 000 000	60
Debt	40 000 000	40
Total capital	100 000 000	100

Mahlangu Ltd started up with the following capital structure – 60% equity and 40% debt. The capital structure can be expressed as the debt:equity ratio (D:E) of 40%:60%.

3 The benefit of debt financing (the leverage effect)

All businesses start up with at least the owners' initial investment. For accounting purposes that can be classified as share capital (if incorporated as a company) or owners'/partners'/members' interest (if any other legal form). These funds are the initial equity financing. This amount may however, not be enough and the owners/investors are forced to take on debt financing as well to fund all the long-term assets of the new business.

As the business becomes more successful and wishes to expand, the owners/investors have a choice of increasing their own stake in the business by personally supplying more money to the business, or raising equity by inviting new owners to invest in the business. Alternatively, they can obtain debt funding.

FINANCIAL LEVERAGE

Financial leverage is the extent to which debt and redeemable preference shares are used in the capital structure of an organisation. (An organisation that has a high percentage of debt and redeemable preference shares in its capital structure will be regarded as having a high degree of financial leverage.)

Debt funding is attractive for the owners mainly because of two reasons:

1. Interest is deductable for tax purposes, making it a cheaper form of financing than equity.
2. The returns for equity holders (measured in the Return on Equity – see key term below) increase when expansion is funded by debt. **This is called the leverage effect**. However, this benefit only accrues up to a point (the optimal debt:equity ratio). Thereafter, the risk for debt providers becomes too high and the cost of debt funding increases to such an extent that it offsets the benefit.

RETURN ON ASSETS (ROA)

This is a measure of the performance generated on all the assets employed in the organisation and expresses **earnings before interest and taxes (EBIT)** as a percentage of the **total assets employed (= equity + debt)**. (Also refer to topic 6 that deals with ratios.)

RETURN ON EQUITY (ROE)

This is a measure of the performance realised by management for the equity holders (shareholders) and expresses **net profit** as a percentage of **equity**. Net profit is the amount of profit available after debt providers have been serviced (interest paid) and taxes paid.

NOTE

ROE measures the organisation's ability to earn a return on the owners'/shareholders' capital. Firstly, you should realise that equity holders receive their reward last; after all other expenses have been paid, including the interest paid to the providers of debt capital. It is therefore appropriate to use net profit as it represents the remaining amount, after

all other expenses have been paid; and furthermore, net profit is normally available for distribution as a dividend to the holders of equity. In this module, we will only be focusing on ordinary shareholders. (Also refer to topic 6 that deals with ratios.)

We will demonstrate the leverage effect in the next simplified example:

Example:

(i) The following information regarding the current situation of Dhlamini Ltd is available:

Total assets	R100 m
Equity	R100 m
Tax rate	28%
Interest rate	10%
Earnings before interest and tax	R20 m

The above (current) situation is presented in table (I) below.

(ii) Let us see what happens when an additional plant (asset of R100 m) is acquired by using **only equity** funding. You may assume that this new plant will generate the same operating returns (EBIT) as the current plant. The changed situation is presented in table (II) below.

(I) **Current financial leverage situation**		**(II)** Additional plant funded with **Equity only**	
Total assets 100:Equity 100		Total assets 200:Equity 200	
Earnings before interest (EBIT)	20,0	Earnings before interest (EBIT)	40,0
Interest (no debt)	0,0	Interest	0,0
Profit before tax	20,0	Profit before tax	40,0
Income tax expense	(5,6)	Income tax expense	(11,2)
Net profit	14,4	Net profit	28,8
Return on assets (ROA)	$= \frac{20}{100} \times \frac{100}{1}$ $= 20\%$	Return on assets (ROA)	$= \frac{40}{200} \times \frac{100}{1}$ $= 20\%$
Return on equity (ROE)	$= \frac{14,4}{100} \times \frac{100}{1}$ $=14,4\%$	Return on equity (ROE)	$= \frac{28,8}{200} \times \frac{100}{1}$ $= 14,4\%$

You will notice that the return on equity (ROE) stays the same, namely at 14,4% of the assets. This is because there were no change in the capital structure, it is still all equity funded. Since there is NO debt funding, the interest amount is 0.

(iii) Let us see what happens if the additional plant of R100 m is funded with 50% equity and 50% debt. This new situation is depicted in table (III) below.

The difference between situation (II) and (III) can be ascribed to the fact that debt funding is brought into the situation. Note that the interest deduction of (R50 m x 10%) decreases the profit before tax (from R40 m to R35 m) as well as the income tax expense on the resulting lower profit (from R11,2 m to R9,8 m). The lower net profit (after tax) is however now divided by a lower equity amount and results in a higher ROE (16,8%

instead of 14,4%). This comparison demonstrates that the inclusion of debt funding, increases the ROE and therefore the wealth of the equity holders (shareholders).

(iv) In order to confirm the above conclusion, that is that the inclusion of debt funding increases the shareholders' return on equity, we take a look at the next situation where the additional plant is funded entirely by debt. This is depicted in table (IV) below.

(III) Additional plant funded with **50% equity and 50% debt (interest 10%)**		**(IV)** Additional plant funded with **no equity and 100% debt (interest 10%)**	
Total assets 200:Equity 150 :Debt 50		Total assets 200:Equity 100 :Debt 100	
Capital structure = D:E = 25:75		Capital structure = D:E = 50:50	
Earnings before interest (EBIT)	40,0	Earnings before interest (EBIT)	40,0
Interest (10% x R50 m)	(5,0)	Interest (10% x R100 m)	(10,0)
Profit before tax	35,0	Profit before tax	30,0
Income tax expense	(9,8)	Income tax expense	(8,4)
Net profit	25,2	Net profit	21,6
Return on assets (ROA)	$= \frac{40}{200} \times \frac{100}{1}$	Return on assets (ROA)	$= \frac{40}{200} \times \frac{100}{1}$
	= 20%		= 20%
Return on equity (ROE)	$= \frac{25,2}{150} \times \frac{100}{1}$	Return on equity (ROE)	$= \frac{21,6}{100} \times \frac{100}{1}$
	= 16,8%		= 21,6%

The difference between situation (III) and (IV) can be ascribed to the fact that only debt funding is used to fund the additional plant in situation (IV). The effect is that the amount of debt increases from R50 m to R100 m. Note that the interest deduction doubled (from R5 m to R10 m) which decreases the profit before tax (from R35 m to R30 m) as well as the income tax expense on the lower profit (from R9,8 m to R8,4 m). The lower net profit (after tax) is divided by a lower equity amount and results in a higher ROE (21,6% instead of 16,8%).

This comparison illustrates that a greater portion of debt funding, (higher D:E rate indicating more debt in the capital structure) increases the return on equity and therefore the wealth of the equity holders (shareholders).

(v) Let us take a look at whether all increases in debt funding will increase ROE and thereby the wealth of shareholders? We assume an interest rate of **20%** and will acquire **two** additional plants with debt funding only. The new situation is depicted in table (V) below.

NOTE

The higher interest rate of 20% instead of the original 10% is due to the fact that when an organisation takes on more debt its obligation to repay its debt increases. The company may not be able to repay the debt and therefore it becomes more risky for debt providers to supply more debt. In order to compensate for the higher risk, the debt providers will expect a higher return (interest rate).

(V) Two additional plants funded with **no equity and 100% debt (interest 20%)**	
Total assets 300:Equity 100 :Debt 200	
Capital structure = D:E = 67:33	
Earnings before interest (EBIT)	60,0
Interest (20% x R200 m)	(40,0)
Profit before tax	20,0
Income tax expense	(5,6)
Net profit	14,4
Return on assets (ROA)	$= \frac{60}{300} \times \frac{100}{1}$
	= 20%
Return on equity (ROE)	$= \frac{14,4}{100} \times \frac{100}{1}$
	= 14,4%

The difference between situation (IV) and (V) can be ascribed to the fact that **the amount of debt increased** from R100 m to R200 m because two additional plants (at R100 m each) are acquired at double the original interest rate (20% instead of 10%). Note that the interest deduction increases (from R10 m to R40 m). This, in turn, decreases the profit before tax (from R30 m to R20 m) as well as the income tax expense on the lower profit (from R8,4 m to R5,6 m). The lower net profit (after tax) is divided by **the same** equity amount and results in a lower ROE (14,4% instead of 21,6%).

This comparison illustrates that the benefit of the leverage effect only accrues up to a point (the target or optimal debt/equity ratio). Thereafter, the risk for debt providers becomes too high and the cost of debt funding increases to such an extent that it offsets the benefit.

4 Target (optimal) capital structure and raising finance (pooling of funds)

TARGET CAPITAL STRUCTURE

Target capital structure or optimal capital structure is the point where the mix of the two capital components (debt and equity) achieves the lowest average cost of long-term financing for the organisation.

According to the above definition the target capital structure is a percentage mix of the components which management considers **optimal**. The organisation will strive to attain this capital structure over the long-term as it raises capital from different sources.

Let us again look at the example relating to Mahlangu Ltd. Additional information is supplied

	R	%	R	%	R	%
	Initial (start-up)		**After Project A (Add R10 m Debt)**		**After Project B (Add R20 m Equity)**	
Equity	60 000 000	60	60 000 000	55	80 000 000	62
Debt	40 000 000	40	50 000 000	45	50 000 000	38
Total capital	100 000 000	100	110 000 000	100	130 000 000	100

Mahlangu Ltd started up with the following capital structure – 60% equity and 40% debt. The capital structure is expressed as the debt:equity ratio (D:E) of 40%:60%.

Let us assume that this capital structure is the mix that management considers more desirable than any other, then this will be the target capital structure which should be used in place of the actual capital structure for certain calculations with regard to cost of capital. (We will deal with the cost of capital in the next study unit.)

In practice, an exact target capital structure cannot be maintained and the actual capital structure (as represented in the debt:equity ratio) will rarely be the same as the target capital structure. If Mahlangu Ltd now needs to raise R10 million for Project A, we can assume that it will issue and sell R10 million of debt, for example, debentures or bonds as its debt level are currently reasonably low. The new debt:equity ratio will now be R50 million:R60 million, which is 45%:55%. (50/110):(60/110). When the organisation needs to raise capital again for Project B (say R20 million), or purely to strengthen the capital structure, it can then try to move towards the target capital structure by raising equity. The new debt:equity ratio will then be R50 million:R80 million which is 38%:62%!

NOTE

Can you see that the actual capital structure at any given time is not the same as the target or optimal capital structure? This is because money tends to be acquired in fixed amounts by issuing securities of one kind at a time. It will be impractical to try to sell some of each security in the target proportion of 60% equity and 40% debt. The distortion arising from trying to get to the target capital structure will usually not be significant. The organisation can also from time to time make a decision to change its optimal capital structure for strategic reasons.

SEPARATION OF INVESTING AND FINANCING DECISION

The decision to invest in an expansion project will be based on the fact that the project generates returns in excess of the weighted average cost of capital of the funding and fits with the sustainable long-term strategy of the organisation. The method of financing is secondary. The latter is determined by the current capital structure versus the target or optimal structure as well as the rates of finance available in the market at the specific point in time.

NOTE

It is very important to understand that the feasibility studies surrounding the acceptance of Project A and B in the Mahlangu Ltd example (whether it will be generating a good enough return) will be done by discounting the cash flows from the projects with the **target capital structure's weighted average cost of capital**. We will not use the cost of the specific type of financing that will be obtained! The choice of financing (debt or equity) is driven by the objective of staying true, or close to the target capital structure. You will learn more about this in topic 8 on Capital budgeting later on in this module.

To recap, forms of capital funding (refer to topic 4) are:

1. Equity finance is provided by the owners (shareholders) of the organisation and can be obtained by:
   - issued share capital
   - distributable reserves, including retained income
   - non-distributable reserves
   - any part of debt instruments or preference shares that are classified as equity
2. Debt finance is provided by the lenders to the organisation and can be obtained by:
   - debentures (that does not have an option to convert to ordinary shares)
   - bonds
   - long-term loans
   - leases
   - any part of debt instruments or preference shares that are NOT classified as equity
   - mortgage bonds

Activity 12.1

Dulamo Ltd is financed as follows:

	Rm
250 million ordinary shares of R1 each	250
Retained income	350
180 000 debentures of R1 000 each	180

REQUIRED

Calculate the amount financed by

a. equity
b. debt

and present the capital structure of the organisation (based on book values).

Solution to activity 12.1

		Rm
a. Financed by equity	(R250 + R350)	= 600
b. Financed by debt	(R180)	= 180
		780
Capital structure:	Equity (600/780 x 100/1)	= 76,92%
	Debt (180/780 x 100/1)	= 23,08%

D:E ratio = 23,08:76,92

5 Summary

In this study unit, we explored the theory of capital structure and explained that equity and debt are the components of an organisation's capital structure. We also explained the meaning of "target capital structure".

Since each component of the capital structure has a different cost, we still need to explain how to calculate the cost of each component. We will explain these calculations in the next study unit.

Self-assessment activity

After having worked through this study unit, determine if you are able to answer the following questions:

a. Define and explain the theory of capital structure.
b. Identify the two components of capital structure.
c. Briefly discuss two main reasons why shareholders would encourage debt financing.
d. Explain what is meant by optimal or target capital structure.

Self-assessment questions:

QUESTION 1

Payless Ltd is financed as follows:

	Rm
400 million ordinary shares of R1 each	400
Retained income	250
Non-distributable reserves	50
Long-term loans	130
Bonds	100

REQUIRED

Calculate the amount financed by

a. equity
b. debt

and present the capital structure of the organisation (based on book values).

Feedback on self-assessment question 1

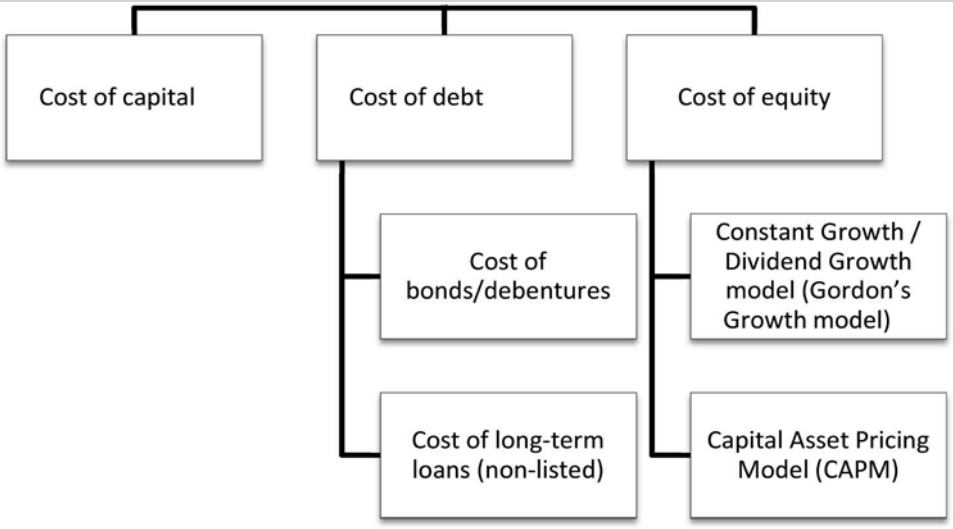
			Rm
a. Financed by equity	(R400 + R250 + R50)	=	700
b. Financed by debt	(R130 + R100)	=	230
			930
Capital structure:	Equity (700/930 x 100/1)	=	75,27%
	Debt (230/930 x 100/1)	=	24,73%

D:E ratio = 24,73:75,27

STUDY UNIT 13

The cost of capital

In this study unit



1 Introduction

In the previous study unit, we discussed the two components of the capital structure of an organisation, namely equity and debt. We pointed out that any given expansion project will be financed with either equity or debt in a bid to attain the target capital structure.

Once the decision on the form of finance has been made (equity or debt), the organisation would have to decide which **specific** financial instrument to use, that is, if the decision was made in favour of debt financing, should a long-term loan or a long-term lease be taken out? Each of these financial instruments has different costs. In order to determine which method of financing will have the lowest cost, we will need to calculate the effective cost of each form (equity and debt). In this study unit, you will learn how to calculate the effective cost of various financial instruments. An understanding of the time value of money concepts, as discussed in topic 3, is required to calculate the cost of these capital components. Please ensure that you have a thorough understanding of topic 3 before attempting this study unit!

2 Cost of capital

COST OF CAPITAL

Cost of capital is defined as the minimum return that the providers of capital require in order to invest (or to stay invested) in the organisation. An organisation must earn at least this return on its non-current assets and investments to ensure that the owners/ investors are satisfied.

According to the above definition, the cost is the return that investors and/or lenders who provided the funds expect to receive as a return on their investment/loan. Cost of capital can be regarded as the opportunity cost of finance.

OPPORTUNITY COST

Opportunity cost is the cash that could have been realised from the best alternative use of the funds that were given up.

The opportunity cost of capital therefore is the return that providers of capital/finance could have earned by investing in alternative projects. The providers of capital are the investors/lenders that have certain requirements regarding the return that they expect on their investment in the organisation.

The first step in determining the cost of capital is to determine the cost of the individual components used to finance the organisation. Calculating the cost of equity and debt is important as one of the fundamental differences between equity and debt is the risk associated with each type and the impact this has on the cost.

EFFECTIVE COST OF FINANCE

The effective cost of finance takes into account all the cash in and outflows related to that specific financial instrument, for example, issue proceeds, listing fees, underwriter fees, period interest, tax deductions, capital repayments, and so on. It also considers the timing of these cash flows by employing time value of money techniques (topic 3).

The effective cost of finance and the market values of financial instruments is an intertwined subject. The market values (expressed as currently traded prices) are determined based on the required rate of return that the fund providers expect. They take into consideration the future NET cash flows that the instrument will provide them, and then discount that with their required return in order to arrive at a value which they are prepared to pay NOW (= present value) for the instrument. These values form the currently traded market values between willing buyers and sellers in an informed market.

We will briefly introduce you to some basic valuation methods/formulae for a limited range of financial instruments (no hybrids). We will then use the current market values to estimate the cost of finance.

Rules/guidelines: MARKET VALUE OF FINANCIAL INSTRUMENTS

1. Market values are usually determined from the perspective of the holder or investor in the instrument.
2. Market value of any instrument is equal to the present value of all future cash flows to the holder of the instrument, that is:
   (a) periodic payments:
      i. interest (debt instruments)
      ii. dividends (shares)
      iii. free cash flows (cash available after tax and capital expenditure) and
   (b) capital repayments – if any
3. The present (market) value is obtained by discounting the future cash flows with the required (that is current or ruling) market rate of return. The current/ruling market rate of return is a pre-tax figure, expressed as a percentage.

4. Pre-tax cash flows are discounted by pre-tax discounting rates (required rate of return).

General remarks:

Market values (prices) for publicly traded financial instruments, such as bonds and shares, are easily available on the Internet and financial press. However, the costs of these instruments are not always so readily available.

To calculate the cost of finance, it then makes sense for us to use the current market prices and the known/estimated future cash flows and arrive at the implied required rate of return! This concept can be summed up very basically as follows:

Present value (PV) = future cash flows ÷ cost of finance (discount rate)

Cost of finance (discount rate) = future cash flows ÷ present value

NOTE

When VALUING debt instruments, we use the PRE-TAX market rate. In later MAC and TAX modules you will learn how section 24J of the Income Tax Act affects the deductibility/ taxability of interest paid/received in the hands of the issuer/holder. Once you know how to apply this, you will use after-tax cash flows and discount by an after-tax effective cost of debt rate. The answer is however, the same as when you discount pre-tax cash flows with pre-tax required returns (cost of finance)! For MAC2602 we would therefore, for ease of use, discount pre-tax cash flows with the pre-tax discount or market rate.

Rules/guidelines: EFFECTIVE COST AND MARKET VALUES

1. The effective pre-tax cost of debt financing (assuming capital is repaid) is always expressed as the yield to maturity (YTM) percentage (that is the internal rate of return (IRR) that will discount all cash flows to zero). The IRR is based on the current market value of the debt instrument and all future pre-tax cash flows.
2. As was mentioned in study unit 12, the cost of debt financing is deductable for tax purposes, which makes it attractive as a form of financing. In the calculation of the average cost of capital of the organisation, we always work with the **after-tax effective cost of debt percentage (%).**
3. In MAC2602, the effective after-tax cost of debt financing is only determined once the effective pre-tax cost (IRR) has first been determined.
4. The effective required return (cost) **for equity instruments** is determined by inference based on the current market price (traded price) of the share or by risk-based methods (capital asset pricing model – CAPM).
5. The effective cost of finance is usually determined from the perspective of the organisation or issuer of the financial instrument.

NOTE

In MAC2602 we will not include flotation costs and other fees in the calculation of the effective cost of financing. That will be covered in later MAC modules.

3 Cost of debt

When debt is introduced into the capital structure of an organisation, the financial risk for the equity holders increases and the cost of equity increases. However, if the amount of debt in the capital structure is optimal (not too high), the debt will lower the organisation's overall cost of finance. This was explained in study unit 12 section 3.

The cost of debt is usually lower (as long as the debt level is acceptable to the debt providers) than the cost of equity because debt carries a lower risk (as discussed in topic 4, it can be secured by assets and debt providers is repaid before equity providers in the case of liquidation). This lower risk also has the effect that the lenders require lower expected returns.

Furthermore, the cost of debt is lower because interest is deductible from taxable income. This is also referred to as the tax shield and means that the South African Revenue Services (SARS) funds the cost of debt to the extent of the ruling tax rate. For example, if the interest payment is R100 and the tax rate is 28%, the interest payment is deducted from other taxable income and the tax payment to SARS is R28 less (effectively a cash inflow netted off against the regular tax payment).

3.1 Cost of bonds/debentures

Before we proceed, let us first discuss some terms that is used with bonds and debentures.

MATURITY DATE / REDEMPTION DATE

The maturity date is the date when a bond/debenture will be redeemed.

For example, "redeemable at 1 March 20x4".

NOMINAL VALUE / FACE VALUE / REDEMPTION

Nominal value is the stated value (or face value) of bonds/debentures. This is the value which the holder will receive at redemption and also the value on which the bond or debenture pays interest.

For example, debentures have a face value of R1 000 and pay interest at 10% per annum.

Meaning:

- At the redemption date the holder will receive R1 000, and
- R100 (R1 000 x 10%) interest at the end of **each year** until the redemption date.

COUPON INTEREST RATE

This is the stated interest rate that the issuing organisation is required to pay, based on the face value of the bond. This interest payment is referred to as the coupon payment.

For example, 8% debentures (3 000 debentures of R100 each) = R300 000.

Meaning:

- The issuing company pays interest of R8 (R100 x 8%) per debenture.
- Total interest on debentures is therefore (R8 x 3 000) = R24 000.

MARKET RATE / RULING INTEREST RATE

The market rate is the current or ruling (required) market rate of return. It is obtained from similarly publicly traded instruments – a pre-tax rate.

For example, the current cost of a similar bond/debenture for five years (the same period).

Meaning:

- This is the rate determined by YTM calculations, based on current quoted values for listed bonds/debentures.

A typical bond/debenture is issued and listed on the applicable exchange as follows:

A company that wishes to issue bonds and be listed on the Bond Exchange of South Africa (BESA) must first obtain a rating from a rating agency such as Moody's, Fitch or Standard & Poor's, before it can list bonds on BESA. After a company's bonds are listed, BESA provides an effective and efficient market for the trading of these bonds.

NOTE

We will only address REDEEMABLE bonds/debentures. Convertible debentures are considered a hybrid instrument and are outside the scope of this module. We also exclude non-redeemable bonds/debentures.

As mentioned before, we will treat bonds and debentures as essentially the same type of instrument.

- **Step 1 – determine the current market value of the bond/debenture**

The market value (M_v) of redeemable debentures is the present value of future interest payments plus the present value of the redemption amount (for MAC2602 purposes, usually at face value). These cash flows are discounted to present values by using the **ruling** interest rate (cost of debt). (Refer to topic 3 where PV of annuities and single payments is covered.)

In valuation questions, we will provide you with this discount rate (k_d or i) (= required rate of return).

NOTE

Bonds/debentures are often redeemed at a discount or at a premium. You will learn how to deal with this in later MAC modules.

Key formula: VALUATION OF DEBENTURES

$$M_V = \underbrace{\left[\frac{I}{(1+k_d)}\right] + \left[\frac{I}{(1+k_d)^2}\right] + \ldots\ldots\ldots\ldots + \left[\frac{I}{(1+k_d)^n}\right]}_{\text{Present value annuity}} + \underbrace{\left[\frac{R}{(1+k_d)^n}\right]}_{\text{Present value single payment}}$$

$$M_V = I \times \left[\frac{1-\frac{1}{(1+i)^n}}{i}\right] + \left[\frac{R}{(1+i)^n}\right]$$

Where:

I = Actual (coupon rate) annual interest payments before tax
k_d or i = **Current** cost of debt (pre-tax market rate)
R = Redemption value
n = Number of years

NOTE

We need to point out again that for VALUATION purposes, we use the pre-tax rate for k_d in this module. Using the after-tax rate would result in the same market value than the value we arrive at by using the pre-tax rate. The application of the post-tax rate, based on the correct application of Section 24J falls outside the scope of this module. You will learn more about Section 24J in your other MAC and TAX modules.

- **Step 2 – calculate the effective cost before tax**

The pre-tax effective cost of redeemable bonds/debentures (k_d) is equal to the yield to maturity or internal rate of return.

YIELD TO MATURITY (YTM)

This is the implied return that the investor will receive by holding a bond/debenture until maturity. It is the discount rate that achieves a net present value (NPV) of NIL for all the cash in- and outflows and is also called the internal rate of return (IRR).

We use the term **net** present value (NPV) because we are discounting inflows AND outflows, therefore the answer is a net amount. The cash flows are entered/timed as follows:

1. Period 0 – The **current market value** of the bond/debenture is treated/entered as an **outflow** (the bondholder will currently PAY this amount to obtain the instrument on the market). *From the issuer's perspective, at the time of initial listing, this is the cash amount the organisation will receive*.
2. Period 1 to n – the **interest payments** (coupon rate before tax) that the bondholder will receive periodically as **inflows** in each period. *From the issuer's perspective, it is the periodic outflow.*
3. Period n – the **capital redemption** (face value, plus/minus premium or discount, if any) at the end of the period as an **inflow** at the end of period n. This is the amount repaid to the investor in terms of the issue terms. *From the issuer's perspective this is an outflow*.

The YTM is mathematically the same as the internal rate of return (IRR), which you can calculate by either …

a. guessing two discount rates, determining the NPV for each and then extrapolating or interpolating to obtain the rate that achieves NIL (refer to topic 3 to refresh your memory)

   OR

NOTE

Tip: Use one low rate to achieve a positive NPV and one high rate to achieve a negative NPV. Then use interpolation to calculate the IRR that results in a NIL NPV.

b. using your financial calculator to calculate IRR. (Refer to activity 13.1 below as an illustration of financial calculator steps to use in order to calculate IRR.)

This effective cost of debentures (YTM) is the cost before taxation.

NOTE

If the market value was correctly calculated based on the current market interest rate, the YTM calculation based on THAT market value will work out to equal the market rate!! The market adjusts the value of the bond/debenture so that any new entrant to the market who purchases the debenture at the going rate, will achieve an effective interest rate (YTM) equal to the going market interest rate, irrespective of the stated coupon rate!

- **Step 3 – calculate the after-tax cost**

The interest which is payable on debentures (or other debt instrument) is deductible for taxation purposes (assume it is used in the production of taxable income). Therefore, the effective cost of debentures **before** taxation should be converted to effective cost **after** taxation as follows:

(Assume a 12% rate before tax and an income tax rate of 28%)

$\therefore$ 12% x $[1 - t]$

Where t = the current income tax rate as a decimal

$\therefore$ 12% x $\frac{72}{100}$ [1 – 0,28 (tax rate)]

= 8,64% after-tax rate

We must bear in mind the fact that the interest is tax deductible means a tax advantage of 28% of 12% = 3,36%. The tax payment (cash outflow) to SARS on other profits is reduced by an amount equal to 3,36% of the debenture's nominal value, which is effectively a cash INFLOW to the organisation. Therefore, we reduce the effective cost of debt with the tax benefit (also called tax shield).

Activity 13.1

Exco Ltd holds R1 000 000 debentures (par value) in BP Ltd. The annual interest (coupon) payment is 15% and the debentures are redeemable after five (5) years at face value. The current market return for similar debentures with a life of five years is 20%. Assume the current company tax rate is 28%.

REQUIRED

Determine:

a. the current market value (M_V) of the debentures with the mathematical formula. [Work to four (4) decimals and round your final answer to the nearest rand.]

b. the effective after tax cost of debt by:

   i. mathematically computing the IRR by interpolating between 14% and 22% (using the interest factor tables)

   ii. using your financial calculator

   Assume that the current market value is the same as the value you calculated in a.

c. Assume the current rate for similar debentures have changed. The new market value for these debentures is now R936 013. Calculate the effective cost of debt by using your financial calculator.

Feedback on activity 13.1

a. Market value of debentures

k_d or i = current market rate (pre-tax) = 20%

I = 15% x R1 000 000 = R150 000 (coupon payment)

R = R1 000 000

n = 5

Then:

$$M_V = I \times \left\{ \left[\frac{1 - \frac{1}{(1+i)^n}}{i} \right] \right\} + \left[\frac{R}{(1+i)^n} \right]$$

$$= 150\,000 \times \left[\frac{1 - \frac{1}{(1+0{,}2)^5}}{0{,}2} \right] + \left[\frac{1\,000\,000}{(1+0{,}2)^5} \right]$$

$$= R150\,000 \times \left[\frac{1 - \frac{1}{2{,}4883}}{0{,}2} \right] + \left[\frac{1\,000\,000}{2{,}4883} \right]$$

$$= R150\,000 \times \left[\frac{1 - 0{,}4019}{0{,}2} \right] + R401\,880{,}80$$

$$= R150\,000 \times \left[\frac{0{,}5981}{0{,}2} \right] + R401\,880{,}80$$

= (R150 000 x 2,9906) + R401 880,80
= R448 590,00 + R401 880,80
= R850 470,80
= R850 471 (rounded to the nearest rand)

NOTE

Do you notice that the current market value is less than the R1m par value? The investors are "punishing" BP Ltd for only offering 15% coupon interest, whilst the current market required rate of return is 20%!

b. Effective after-tax cost of debt

i. Calculate IRR/YTM by interpolating between 14% and 22%.

Firstly you have to calculate the NPV's by using 14% and 22% as discount rate (effective cost of debt). You are guessing that the actual effective cost of debt lies somewhere between 14% and 22%!

	At 14%		**At 22%**	
	N = 5 (5 period factor)	R	N = 5 (5 period factor)	R
150 000 p.a. **for** 5 years ∴150 000 x Table B factor	3,433	514 950	2,864	429 600
R1 000 000 **after** 5 years ∴1 000 000 x Table A factor	0,519	519 000	0,370	370 000
Present values of inflows		1 033 950		799 600
Less: Current market value as calculated in (a) above		(850 471)		(850 471)
= NPV		183 479		(50 871)

By interpolation, the effective cost (IRR or YTM) before tax equals:

a		*b*
14%	?%	22%
183 479	0	(50 871)
x	*y*	*z*

The IRR is where the NPV = 0.

Formula (topic 3) $a\% + \left[\frac{x-y}{x-y} \times (b-a)\right]$

$$= 14\% + \left[\frac{183\,479-0}{183\,479-(-50\,871)} \times 8\%\right]$$

$$= 14\% + \left[\frac{183\,479}{234\,350} \times 8\%\right]$$

$$= 14\% + (0{,}7829 \times 8\%)$$

$$= 14\% + 6{,}2634\%$$

$$= 20{,}2634\%$$

$$\approx 20\%$$

The fact that we rounded some of the decimals caused a slight rounding difference.

The after-tax effective cost of debt is obtained by converting the before tax cost as follows:

$$k_d = 20\% \times [1 - t]$$

$$= 20\% \times [1 - 28\%]$$

$$= 14{,}4\%$$

ii. Calculate IRR/YTM with a financial calculator

SHARP EL-738 **Hp10BII**

Initial outflow = R850 471. Number of PMT's/cash flows = 4 of R150 000 and at the end of year 5 = R150 000 + redemption value end year 5 = R1 150 000			
Key in:	Display will read:	Key in:	Display will read:
Clear all registers first:			
CFi 2ndF CA	0.0000	2ndF C ALL 3rdF C MEM	1 P_YR then 0.0000 c FLo clr then 0.0000
Enter data sets:			
+/– 850 471 ENT	DATA SET:CF 0.0000	850471+/– CF_j	CFLO/CF–850,471.0000
150000 (x, y) 4 ENT	DATA SET:CF 1.0000	150000 INPUT 4 CF_j	150000.0000 4.0000
1150000 ENT	DATA SET:CF 2.0000	1150000 CFj	CFLO/CF 1,150,000.0000
Clear cash flow registers:			
ON/C 2ndF CASH 2ndF CA	0.0000 RATE(I/Y)= RATE(I/Y)= 0.0000		
and **press COMP to get the IRR**	RATE(I/Y)= 19.9999 20% (rounded)	2ndF IRR/YR	19.9999 20% (rounded)

The pre-tax YTM of the debentures is 20%.

NOTE

Can you see that the YTM is equal to the current market rate!! The market adjusts the value of the debenture so that any new entrant to the market, who purchases the debenture at the going price, will achieve an effective interest rate (YTM) equal to the current market rate, irrespective of the stated coupon rate!

The after-tax cost of debt is then:

$$k_d = 20\% \times [1 - t]$$
$$= 20\% \times [1 - 28\%]$$
$$= 14{,}4\%$$

c. Calculate the effective cost (new market value provided) by using your financial calculator.

SHARP EL-738 **Hp10BII**

Initial outflow = R936 013. Number of PMT's/cash flows = 4 of R150 000 and at the end of year 5 = R150 000 + redemption value end year 5 = R1 150 000			
Key in:	Display will read:	Key in:	Display will read:
Clear all registers first:			
CFi 2ndF CA	0.0000	2ndF C ALL 3rdF C MEM 0	1 P_YR then 0.0000 c FLo clr then 0.0000
Enter data sets:			
+/– 936 013 ENT	DATA SET:CF 0.0000	936 013 +/– CF_j	CFLO/CF–936,013.0000
150000 (x, y) 4 ENT	DATA SET:CF 1.0000	150000 INPUT 4 CF_j	150000.0000 4.0000
1150000 ENT	DATA SET:CF 2.0000	1150000 CFj	CFLO/CF 1,150,000.0000
Clear cash flow registers:			
ON/C 2ndF CASH 2ndF CA	0.0000 RATE(I/Y) = RATE(I/Y) = 0.0000		
and **press COMP to get the IRR**	RATE(I/Y) = 17.0000	2ndF IRR/YR	17.0000

The after tax cost of debt now is:

$$k_d = 17\% \times [1 - t]$$
$$= 17\% \times [1 - 28\%]$$
$$= 12{,}24\%$$

3.2 Cost of long-term loans (non-listed)

Once again, we should use the market-related interest rates that can currently be negotiated for the same risk profile, security and repayment terms.

For example, ABC Ltd entered into a ten-year long-term loan with Best Bank three years ago at an interest rate of 10%. For calculating the average cost of capital of ABC Ltd, they would ask the bank to quote a new interest rate (market-related) for the remaining seven years and the current risk profile.

NOTE

It is beyond the scope of MAC2602 to investigate all the issues surrounding the determination of the effective cost and valuation of non-listed long-term loans. Therefore, you do not need to revalue a loan when calculating the weighted average cost of capital (WACC) in the next study unit (study unit 5.3). In WACC calculations we will use the **new rate** (this will be given to you) and the **book value** as per statement of financial position.

NOMINAL INTEREST RATE (LOANS)

This is the named or quoted rate usually stated on annually compounded basis. It may be different from the effective rate due to non-annual compounding. (Refer to topic 3 – Time value of money)

For example, BB Bank advertises loans at 12%.

The loans are normally entered into with reference to LIBOR, JIBAR or the prime rate. As example:

"Interest is charged at JIBAR plus 0,5%."

LONDON INTERBANK OFFERED RATE (LIBOR)

LIBOR is the average interest rate for interbank loans that leading banks in London charge. Banks borrow money and they pay interest to their lenders based on certain rates. The Libor figure is an average of these rates. Many financial institutions, mortgage lenders and credit card agencies track the rate, which is produced daily to fix their own interest rates. LIBOR is therefore a benchmark for finance all around the world.

http://en.wikipedia.org/wiki/LIBOR

JOHANNESBURG INTERBANK AGREED RATE (JIBAR)

JIBAR is the money market rate that is used in South Africa. It is calculated as the average prime lending rate at which local banks buys and sells money.

http://en.wikipedia.org/wiki/JIBAR

4 Cost of equity

The way in which an organisation raises equity influences the cost of equity in the following ways:

i. The issuing of new shares

The issue of new shares entails expenses that influence the cost of the shares. These expenses are commissions and various advisor and underwriter fees and are called flotation cost. Refer also to topic 4 where we briefly described the lengthy (and expensive) process involved in issuing new shares.

ii. Retaining earnings

Retained earnings also have a cost and it is not a free source of capital. The shareholders will incur an opportunity cost when retained earnings are used for capital projects. The opportunity cost is the cash that they would have received as dividends which, in turn, the shareholders could have invested in other investments themselves.

The cost of equity can be determined by various methods as will be discussed below.

4.1 Dividend growth model/Constant growth model/Gordon's growth model

We mentioned previously that the required return (cost) for equity is not instantly available by looking it up in the financial press. It is calculated with reference to the publicly available market (traded) price. The underlying assumption is that the required return was used to discount the cash flows to the shareholders to arrive at the market value (= present value). We will therefore use the market value to derive the required rate of return.

We will use the constant growth model, also known as the dividend growth model. This model is based on the assumption that owners/investors expect that there should be earnings growth and a corresponding increase in dividends, that is dividend **growth**, in any share investment. The assumption implies that there is a direct relationship between the market value of shares and the expected future dividends on the shares.

A growth rate for the dividends needs to be estimated and discounted cash flow analysis is then applied. This means that the present value of the future inflows of dividends is determined by using the constant growth rate as discount rate. (Discounting was explained in topic 3.) The formula is based on the present value of a perpetuity.

- **Step 1 – determine the market value of the share**

Key formula: DIVIDEND GROWTH MODEL (CONSTANT GROWTH MODEL)

$$P_0 = \frac{D_1}{k_e - g} \quad [\text{and } D_1 = D_0(1+g)]$$

where P_0 = current market price of the share (current value of the share) at point 0 in time

D_0 = current dividend (or earnings per share x payout ratio)

D_1 = D_0 x (1 + g) = the **expected** dividend per share for year 1 (after growth)

k_e = the required rate of return (market discount rate or cost of ordinary equity/ shares)

g = expected CONSTANT growth rate in earnings (and assuming a constant payout ratio, therefore in dividends as well)

NOTE

Can you see that we are only discounting dividends? An equity holder of ordinary shares is never ENTITLED to a repayment of capital from the company. Ordinary shares only have a residual interest. This means that, in the case of liquidation, the ordinary shareholders are paid out the residual cash after all other obligations and fund providers have been paid or partially paid. We can therefore not include the par value of the share in the discount model. If the shareholder wants to sell his shares, he/she has to sell it in the secondary market to another shareholder/investor.

We will cover share buy-backs in your third year MAC module. This is used in specific circumstances.

In order to calculate the current market price (P_0) realistically …

- it must be assumed that the expected dividend will grow at a constant rate (growth rate, (g)) into perpetuity.
- the expected dividend growth must be estimated as accurately as possible.

Criticisms against this method are …

- expected future dividends are uncertain.
- expected growth rate in dividends is uncertain and it is unrealistic to assume that it will stay constant.

Despite the criticisms, this method is still used, especially for valuing mature companies that pay a predictable dividend and the expected growth equals growth in the general economy or industry sector.

Activity 13.2

Super (Pty) Ltd is a listed company that has just paid a dividend of R1,30 on each of its ordinary shares. The expected rate of return of the shareholders (investors) in Super (Pty) Ltd's ordinary shares is 14,5%. They also expect that the dividend will grow at a constant rate of 8% in future.

REQUIRED

Determine the market value of an ordinary share of Super (Pty) Ltd.

Feedback on activity 13.2

$$P_0 = \frac{D_1}{k_e - g} \text{ [and } D_1 = D_0(1 + g)\text{]}$$

$$P_0 = \frac{1,4040}{0,145 - 0,08} \text{ [and } D_1 = 1,30\ (1 + 0,08) = 1,30 \times 1,08 = 1,4040\text{]}$$

$$P_0 = \frac{1,4040}{0,065}$$

$$P_0 = \text{R21,60}$$

- **Step 2 – determine the cost of equity**

The constant growth (dividend growth) model is based on the return that the investor is prepared to accept on the investment. The organisation cannot attract shareholder capital if it does not pay this return to the shareholders for the funds invested.

The valuation formula above can therefore be restated to calculate the expected rate that investors will require (k_e) (or cost of ordinary shares).

Key formula: REQUIRED RATE OF RETURN

$$k_e = \frac{D_1}{P_0} + g \quad \text{[and } D_1 = D_0(1 + g)\text{]}$$

Note that:

$\frac{D_1}{P_0}$ = expected dividend yield

Conceptually, the two components of the required return on shares are therefore the dividend yield (addressing the income expectation) and the capital growth (g) in the share price!

Activity 13.3

The current market price of a share is R80,00. The next expected dividend per share is R4,00. It is anticipated that the earnings and dividends will show a growth of 8% per annum.

REQUIRED

Determine the cost of an ordinary share (required rate of return) by using the constant growth model.

Feedback on activity 13.3

$$k_e = \frac{D_1}{P_0} + g$$

$$k_e = \frac{R4}{R80} + 0{,}08$$

$$= 0{,}05 + 0{,}08$$

$$= \underline{0{,}13} \text{ (or 13\%)}$$

NOTE

There was no need to calculate D_1 as it was given in the question. If we had given you the CURRENT dividend, you would have multiplied that with (1 + g) to obtain the expected dividend for year 1.

4.2 Capital Asset Pricing Model (CAPM)

- **Background**

The CAPM was developed to eliminate the limitations of the constant growth model. The CAPM is based on the principle that investors in ordinary shares should be rewarded for the risk they bear. Thus, the higher the risk, the higher the return in order to compensate for the higher risk. The CAPM attempts to quantify the level of risk in respect of a specific share investment and to ascertain the required rate of return in respect of the share investment. **This is then the required rate of return for the investor and can be used as the cost of ordinary shares of the organisation**.

The expected rate of return required by ordinary shareholders essentially comprises two elements, namely …

- a risk-free rate of return such as the rate of return on government bonds; (eg R186 (10,5% IRB 2025/26/27))

  http://www.treasury.gov.za/divisions/alm/2004/What%20are%20RSA%20Bonds.pdf

  and

- a quantification of the market risk element. Any instrument, other than government bonds, entails risk. The difference between the returns on a risk-free investment and the return for all the traded shares (risk bearing investments) is referred to as the market risk premium.

RISK-FREE RATE

The risk-free rate of return is the return that can be earned on investments that has zero risk. An example of a risk free instrument is government bonds and the return thereon will represent the risk-free rate.

NOTE

Rating agencies also rate the creditworthiness of governments. The euro crises in 2011/2 have seen the credit ratings of governments like Greece and Spain plummet. Make sure that you select an appropriate, government bond as the risk free rate. For MAC2602 we will provide you with the risk-free rate and you can assume that it is "risk-free".

- **Factors affecting the cost of equity**

The equity shareholders will determine the rate that they expect by taking the basic risk-free rate and adjusting it for the risk profile of the organisation.

– Market risk (also called 'systemic risk')

MARKET RISK

Risk associated with the economical environment in which ALL organisations do business and which is influenced by interest rates, exchange rates, oil prices and various other factors that are difficult to quantify.

TABLE 13.1: Factors that increase risk and affect the entire market

FACTORS THAT INCREASE RISK AND AFFECT THE ENTIRE MARKET
– the state of the world economy, for example an international slow down or recession
– the state of the national economy, for example high inflation
– political instability in the country
– market sentiment on the JSE, for example uncertainty regarding future prospects

The market assesses the above factors that affect the risk of public companies and determines a premium rate (market risk premium) that should be added to the risk-free rate in order to arrive at the return that investors require on ordinary shares. A specific company will be more or less sensitive to changes in the general market conditions. This is represented by Beta (β) in the CAPM.

– Specific risk (also called 'unsystemic risk')

SPECIFIC RISK

Risk associated with an investment in a specific company.

TABLE 13.2: Factors that increase risk and affect a specific organisation

FACTORS THAT INCREASE RISK AND AFFECT A SPECIFIC ORGANISATION
– high business risk (as discussed in detail later in this module)
– high financial risk (as discussed in detail later in this module)
– labour unrest and strikes

Portfolio theory assumes that the investor will address specific risks relating to a company by diversifying his/her portfolio (buying other shares not subject to these specific risks). For example, if platinum mining companies are considered having more specific risk, the prudent investor would diversify his/her portfolio of share investments by also including shares of a retailer, which is deemed less risky.

- **CAPM assumptions**

The CAPM is based on the assumption that an investor can avoid specific risk by investing in a diversified share portfolio and therefore spreading his risk and limiting it to a minimum. Thus, market risk is the only risk an investor can expect compensation for, and the expected rate of return (compensation) is determined by means of the CAPM.

In appraising the risk associated with an individual share investment, not only the variability of the expected returns of the share itself but also the correlation between expected returns on this share and the remainder of all the shares listed, must be taken into account.

Another way to describe the risk/return relationship is in terms of beta coefficients (β). The β represents the unavoidable (market/systemic) risk arising from general economic trends and political and social factors. The CAPM provides a means for determining a market-adjusted discount rate that is applicable to a specific share.

Key formula: CAPM FORMULA

Using the CAPM method, the expected (required) returns (the cost of common equity) (k_e) can be stated as follows:

$$K_e = R_f + \beta\ (R_m - R_f)$$

where:

Rf	=	risk-free rate
Rm	=	the market return (for all shares)
$(R_m - R_f)$	=	market risk premium
β	=	the share's beta coefficient, which measures the share's relative risk (return volatility)

NOTE

The portfolio effect and more detail in respect of the elements of the CAPM such as calculation of beta (β) and the risk-free rate, are dealt with in later MAC modules.

Activity 13.4

Bushbuck Limited has the following optimal capital structure:

Debt	= 25%
Equity (ordinary shares)	= 75%

Their tax rate is 28% and their beta is 1,3.

Investors expect earnings and dividends to grow at a constant rate of 7% in the future.

The previous year a dividend of R3,70 per share was paid (D_0).

The current market price at which a share sells is R60.

The risk-free rate is considered to be 6% and the market risk premium is 5%.

REQUIRED

Determine the cost of ordinary shares for Bushbuck Ltd …

a. by using the constant growth model (discounted cash flow approach).
b. by using the CAPM approach.

Feedback on activity 13.4

a. Constant growth model approach:

$$k_e = \frac{D_1}{P_0} + g \quad [\text{and } D_1 = D_0(1+g)]$$

$$k_e = \frac{\text{R3,9590 (calc.1)}}{\text{R60}} + 0{,}07$$

$$= 0{,}0660 + 0{,}07$$

$$= \underline{0{,}1360} \text{ (or 13,6\%)}$$

① D_1 = D_0 x (1 + g) = the expected dividend per share for year 1

= R3,70 x (1 + 0,07)

= R3,9590

b. CAPM approach:

$k_e = R_f + \beta(R_m - R_f)$

$= 0{,}06 + 1{,}3\ (0{,}05)$

$= 0{,}06 + 0{,}0650$

$= 0{,}1250$ (or 12,5%)

---

5 Summary

In this study unit, we explained what is meant by the concept cost of capital. Since the components of the capital structure consist of equity and debt, we need to calculate the cost of each component separately.

We explained the calculation of the cost of debt, based on the market value of the debt. We then presented two models, namely the constant growth model (dividend growth model) and the capital asset pricing model, to be used as methods to determine the cost of equity. We also highlighted factors that affect the market risk premium that is used in the CAPM.

We will use the cost of the different components in the capital structure to calculate the weighted average cost of capital in the next study unit.

Self-assessment activity

After having worked through this study unit, determine if you are able to answer the following questions:

a. Define cost of capital with reference to the rate of return.
b. Explain the meaning of "opportunity cost".
c. List reasons why cost of debt is usually lower than cost of equity.
d. Explain the principle on which the valuation (market value) of debt is based.
e. List two ways by which equity can be raised and explain the costs related to each method.
f. List and explain the assumption on which the constant growth model is based.
g. List and explain the limitations of the constant growth model.
h. List and explain the principle on which the CAPM is based.
i. Describe what is meant by the term "market risk premium".

Self-assessment questions:

QUESTION 1

NewAfrico Ltd holds R1 000 (par value) debentures in Zim Ltd. The annual interest (coupon) payment is 8% and the debentures are redeemable after four (4) years at face value. The current market return for similar debentures with a life of four years is 10%. Assume the current company tax rate is 28%.

REQUIRED

Determine

a. the current market value (M_V) of the debentures.
b. the effective after tax cost of debt by:
    i. mathematically computing the IRR by interpolating between 8% and 12% (using factor tables), and
    ii. using your financial calculator.

    Assume that the current market value is the same as the value you calculated in a.

c. Assume the current rate for similar debentures have changed. The new market value for these debentures is now R899. Calculate the effective cost of debt using your financial calculator.

QUESTION 2

MacBean's ordinary shares currently trade at R30,00 per share. The expected dividend to be paid per share at the end of the year is R3 (D_1 = R3,00). The dividend is expected to grow at a constant rate of 5% per year.

REQUIRED

Determine the cost of MacBean's ordinary shares (common equity).

QUESTION 3

Personal Book Stores Limited (PBS) has a beta of 0,8, a risk free-rate of 6% and the market risk premium is 5,5%. PBS' shares is currently trading at R3,24.

REQUIRED

Determine the estimated cost of common equity using the CAPM model.

Feedback on self-assessment questions

QUESTION 1

a. Market value of debentures

k_d or i = current market rate (pre-tax) = 10%
I = 8% x R1 000 = R80 (coupon payment)
R = R1 000
n = 4

Then:

$$M_V = I \times \left\{ \left[\frac{1 - \frac{1}{(1+i)^n}}{i} \right] \right\} + \left[\frac{R}{(1+i)^n} \right]$$

$$= R80 \times \left[\frac{1 - \frac{1}{(1+0,1)^4}}{0,1} \right] + \left[\frac{1\,000}{(1+0,1)^4} \right]$$

$$= R80 \times \left[\frac{1 - \frac{1}{1,4641}}{0,1} \right] + \left[\frac{1\,000}{1,4641} \right]$$

$$= R80 \times \left[\frac{1 - 0,6830}{0,1} \right] + R683,0135$$

$$= R80 \times \left[\frac{0,3170}{0,1} \right] + R683,0135$$

= (R80 x 3,170) + R683,0135
= R253,60 + R683,0135
= R936,6135
= R937 (rounded to nearest rand)

NOTE

R937 < R1 000, because 8% paid < 10% required market rate!

b. Calculate IRR/YTM by:

i. interpolating between 8% and 12%

Firstly you have to calculate the market values (NPV's) arrived at by using 8% and 12% as discount rate.

	At 8%		At 12%	
	N = 4 (4 period factor)	R	N = 4 (4 period factor)	R
R80 p.a. **for** 4 years ∴80 x Table B factor	3,312	265	3,037	243
R1 000 **after** 4 years ∴1 000 x Table A factor	0,735	735	0,636	636
Present values of inflows		1 000		879
Less: Current market value as calculated in (a) above		(937)		(937)
= NPV		63		(58)

By interpolation, the effective cost (IRR/YTM) before tax equals:

a		*b*
8%	?%	12%
63	0	(58)
x	*y*	*z*

Formula (topic 3) $a + \left[\frac{x-y}{x-z} \times (b-a)\right]$

$= 8\% + \left[\frac{63-0}{63-(-58)} \times 4\%\right]$

$= 8\% + \left[\frac{63}{121} \times 4\%\right]$

$= 8\% + (0{,}5207 \times 4\%)$

$= 8\% + 2{,}0826\%$

$= 10{,}0826\%$

$\approx 10\%$

The after-tax effective cost of debt is obtained by converting the before tax cost as follows:

k_d = 10% x [1 – t]

= 10% x [1 – 28%]

= 7,2%

b. (ii) Calculate IRR/YTM with your financial calculator.

SHARP EL-738 **Hp10BII**

Initial outflow = R937. Number of PMT's/cash flows = 3 of R80 and at the end of year 4 = R80 + redemption value end year 4 = R1 080			
Key in:	Display will read:	Key in:	Display will read:
Clear all registers first: CFi 2ndF CA	0.0000	2ndF C ALL 3rdF C MEM 0	1 P/YR then 0.0000 c FLo clr then 0.0000
Enter data sets: +/– 937 ENT	DATA SET:CF 0.0000	937+/– CF_j	CFLO/CF–937.0000
80 (x, y) 3 ENT	DATA SET:CF 1.0000	80 INPUT 3 CF_j	80.0000 3.0000
1 080 ENT	DATA SET:CF 2.0000	1080 CF_j	CFLO/CF1,080.0000
Clear cash flow registers: ON/C 2ndF CASH 2ndF CA	0.0000 RATE(I/Y) = 0.0000 RATE(I/Y) = 0.0000		
and **press COMP to get the IRR**	RATE(I/Y) = 9.9869 10% (rounded)	2ndF IRR/YR	9.9869 10% (rounded)

The pre-tax YTM of the debentures is 10%.

The after-tax cost of debt is then:

k_d = 10% x [1 – t]

= 10% x [1 – 28%]

= 7,2%

c. Calculate the effective cost (new market value (R899) provided) by using your financial calculator.

SHARP EL-738 **Hp10BII**

Initial outflow = R899. Number of PMT's/cash flows = 3 of R80 and at the end of year 4 = R80 + redemption value end year 4 = R1 080			
Key in:	Display will read:	Key in:	Display will read:
Clear all registers first: CFi 2ndF CA	0.0000	2ndF C ALL 3rdF C MEM 0	1 P_YR then 0.0000 c FLo clr then 0.0000
Enter data sets: +/– 899 ENT	DATA SET:CF 0.0000	899+/– CF_j	CFLO/CF–899.0000
80 (x, y) 3 ENT	DATA SET:CF 1.0000	80 INPUT 3 CF_j	80.0000 3.0000
1080 ENT	DATA SET:CF 2.0000	1080 CF_j	CFLO/CF1,080.0000
Clear cash flow registers: ON/C 2ndF CASH 2ndF CA	0.0000 RATE(I/Y) = RATE(I/Y) = 0.0000		
and **press COMP to get the IRR**	RATE(I/Y) = 11.2746 11% (rounded)	2ndF IRR/YR	11.2746 11% (rounded)

The pre-tax YTM (IRR) of the debentures is 11%.

The after-tax cost of debt is then:

k_d = 11% x [1 – t]
= 11% x [1 – 28%]
= 7,92%

QUESTION 2

Cost of an ordinary equity using the dividend growth model:

$$k_e = \frac{D_1}{P_0} + g \quad [\text{and } D_1 = D_0(1+g)]$$

$$k_e = \frac{R3}{R30} + 0{,}05$$

= 0,10 + 0,05
= 0,15 (or 15%)

QUESTION 3

CAPM approach:

k_e = R_f + $\beta (R_m - R_f)$
= 0,06 + 0,8(0,055)
= 0,06 + 0,0440
= 0,1040 (or 10,4%)

NOTE

The information in the question, regarding the current market price of the shares is not relevant for use in the CAPM approach. It only features in the dividend growth model. Sometimes additional information, that is not relevant to the specific question, will be supplied in order to test if you can distinguish whether it is relevant or not for the method you are required to use.

STUDY UNIT 14

The weighted average cost of capital

In this study unit

1 Introduction

We discussed the concept "cost of capital" in the previous study unit. We explained that the component cost associated with the cost of capital entails equity and debt. We also illustrated how to calculate the cost of these individual components.

In this study unit, we will discuss the calculation of the weighted average cost of capital (WACC).

2 Weighted average cost of capital

Thus far, we have dealt with the cost of the two components of the capital structure, namely equity and debt. We will assume that the organisation has identified its optimal capital structure as was discussed in study unit 5.1. We will now use the target proportions of debt and ordinary equity together with their respective component costs to calculate the weighted average cost of capital.

WEIGHTED AVERAGE COST OF CAPITAL (WACC)

The WACC represents the return that a company needs to achieve in order to cover the expected returns of both the equity providers and the debt providers.

Key formula: WEIGHTED AVERAGE COST OF CAPITAL (TARGET CAPITAL STRUCTURE)

$$WACC = (k_e \times \text{Equity funding \%}) + (k_d \times \text{Debt funding \%})$$

Where:

k_e = equity-holders' current required rate of return (cost of equity)

k_d = debt-holders' current required rate of return (cost of debt after tax)

For example:

If Mahlangu Ltd, from our previous example, decided that their optimal or target capital structure is a debt/equity ratio of 40%/60% and the effective cost of debt funding is currently 9% before tax and the shareholders expect a required return of 12%, their WACC would look as follows:

WACC = (k_e x Equity funding %) + (k_d x Debt funding %)
= (12% x 60%) + [(9% x (1 – 0,28)) x 40%]
= 7,2% + 2,5920%
= 9,7920%

NOTE

It is important that you use the current market effective after-tax cost of debt and required returns, and NOT the interest rates that the organisation is currently paying on its existing financing!

Using the target capital structure in calculating the WACC is conceptually the soundest method. However, in many instances we would not have access to the organisation's target capital structure as the top management would not necessarily communicate that to outsiders. In such instances, our point of departure is that an organisation is currently optimally financed and that the ratio of the financing is going to remain constant. (Refer back to study unit 12, section 4, where we indicated that the organisation would always strive to be close to the optimal or target capital structure.) If the ratio is not going to remain constant, the cost of capital will change and will have to be re-calculated.

NOTE

Where we do not give you the target capital structure in a question, you should base your calculations on the current funding structure, using the current market value of the equity and debt components.

The average cost of capital is calculated by multiplying the current market cost of each source of capital by their weightings, based on their respective current market values. The total of the weighted average amounts or percentages represent the weighted average cost of capital.

Key formula: WEIGHTED AVERAGE COST OF CAPITAL (MARKET VALUES)

$$WACC = k_e \times \frac{v_e}{v_e + v_d} + k_d \times \frac{v_d}{v_e + v_d}$$

where k_e = equity-holders' **current** required rate of return (cost of equity)
k_d = debt-holders' **current** required rate of return (cost of debt **after tax**)
v_e = market value of equity (weighting for k_e)
v_d = market value of debt (weighting for k_d)

The above formula shows that the WACC represents the company's required return for investments and includes financing from shareholders (k_e) and debt providers (k_d). The formula reflects the after tax cost of each source of finance, weighted by its contribution to the value of the organisation.

We use the current required rate of return as this is the rates that the organisation would have to pay when it sources new funding for its projects.

The formula above can be simplified as follows:

$$WACC = \frac{k_e v_e + k_d v_d}{v_e + v_d}$$

NOTE

It is important to realise that:

The market value of the company v_o = market value of equity (v_e) + market value of debt (v_d)

Steps to perform in order to calculate the WACC:

1. Determine the components making up the capital structure from the current statement of financial position. Ensure that you have correctly classified components (financing instruments) as either equity or debt.
2. Revalue each component to its CURRENT MARKET VALUE (perform the valuation if current prices were not given in the question) as demonstrated in study unit 13.
3. Establish the individual component's CURRENT, EFFECTIVE AFTER TAX costs or required return (k_e and k_d). If not given in the question, use the market values to inversely calculate the required return, as demonstrated in study unit 13.
4. WEIGH each component based on CURRENT MARKET VALUES as determined in step 2.
5. Calculate the WACC.

NOTE

The market value of the ordinary equity represents the owners' total interest at current market prices. You do not have to add the reserves as another component to the capital structure!

Unless there is something to the contrary, it is assumed in the examples that follow, that the capital structure presented is optimal. This is the capital structure which will require the minimum average cost of capital for obtaining a certain amount of funds.

Activity 14.1

BBC (Ltd) has the following information:

The market values of the different components are:

Debt (long-term loans)	:	R200 m
Ordinary shares	:	R500 m

The current (market related) cost of the different components was already calculated as being:

Debt (long-term loan)	:	6% (after-tax)
Ordinary shares	:	14%

REQUIRED

Calculate the WACC of BBC (Ltd) by …

a. using the mathematical formula.
b. completing the WACC table.

Feedback on activity 14.1

The weighted average cost of capital can be calculated as follows:

a. Using the formula (in R millions):

$$WACC = \frac{k_e v_e + k_d v_d}{v_e + v_d}$$

$$WACC = \frac{(14\% \times 500) + (6\% \times 200)}{500 + 200}$$

$$WACC = \frac{70 + 12}{700}$$

$$WACC = \frac{82}{700}$$

WACC = 11,71%

Or

b. Using the WACC table:

Type of capital	Total amount at market values ③ (R million)	% of total capital (weight)	Cost of capital ③	Weighted cost of capital
	R	%	%	%
E: Equity – ordinary shares	500	E/V 71,43	14	10,00 ①
+ D: Debt – long-term loans	200	D/V 28,57	6	1,71 ②
= V: Value	700	100		11,71

Calculations:

① 71,43% x 14% = 10,00

② 28,57% x 6% = 1,71%

③ Given

NOTE

Did you notice that the table above is solving the mathematical formula for WACC as noted below:

$$WACC = k_e \times \frac{V_e}{V_e + V_d} + k_d \times \frac{V_d}{V_e + V_d}$$

3 Using WACC for capital budgeting decisions

The weighted average cost of capital is used as a basis to determine whether a capital investment should be accepted or rejected. It is used as the discounting rate in capital budgets (capital investment decisions) in order to determine whether the capital investment renders a higher return than the cost of capital (WACC), or not. Capital investment decisions will be discussed in the topic, Capital budgeting, later on in this module.

4 Summary

In this study unit we explained the concept of the weighted average cost of capital and illustrated how it can be calculated. We will conclude this topic with comprehensive self-assessment questions that will pull together all the concepts covered in the three study units.

Self-assessment activity

After having worked through this study unit, determine if you are able to answer the following questions:

a. Define the key term “weighted average cost of capital”.

b. What do k_e and k_d represent in the WACC formula (k_e x Equity funding %) + (k_d x Debt funding %)?

c. Is the cost of debt that we use in the WACC formula before tax or after tax?

d. Do we use the current market-related effective interest rates and required returns or the interest rates that the organisation is paying on its existing financing in the calculation of WACC?

e. What does the WACC formula $\frac{k_e v_e + k_d v_d}{v_e + v_d}$ reflect?

f. Which structure will you use when calculating the WACC of an organisation if you do not have the target capital structure?

Self-assessment questions:

QUESTION 1

Brixton (Proprietary) Limited is financed as follows:

	Current market values
	R million
250 million ordinary shares	400
1 800 000, 18% debentures	200
	600

The following was established:

1. The management is convinced that the organisation is financed optimally and that the ratio of the financing components will remain constant in the future.
2. The current cost of the various financing components, **after taxation** at 28%, is as follows:
   - Ordinary shares 18%
   - Debentures 13%

REQUIRED

Calculate the WACC of Brixton (Pty) Ltd by …

a. using the mathematical formula.

b. completing the WACC table.

Feedback on self-assessment question 1

a. Using the formula:

$$\text{WACC} = \frac{k_e v_e + k_d v_d}{v_e + v_d}$$

$$\text{WACC} = \frac{(18\% \times 400) + (13\% \times 200)}{400 + 200}$$

$$\text{WACC} = \frac{72 + 26}{600}$$

$$\text{WACC} = \frac{98}{600}$$

WACC = 0,1633

WACC = 16,33%

Or

b. Using the table format

$$WACC = k_e \times \frac{V_e}{V_e + V_d} + k_d \times \frac{V_d}{V_e + V_d}$$

Type of capital	Total amount at market values ③ (R million)	% of total capital (weight)	Cost of capital③	Weighted cost of capital
	R	%	%	%
E: Equity – ordinary shares	400	E/V 66,67	18	12,00①
+ D: Debt – debentures	200	D/V 33,33	13	4,33②
= V: Value	600	100		16,33

Calculations:

① 66,67% x 18% = 12,00

② 33,33% x 13% = 4,33%

③ Given

COMPREHENSIVE SELF-ASSESSMENT QUESTIONS

(COVERING ALL STUDY UNITS OF TOPIC 5)

QUESTION 2

The following is an extract from Vuju's Steelwork Limited's statement of financial position as at 31 May 20x1:

EQUITY AND LIABILITIES	**Rm**
Capital and reserves	
Equity	**900**
Ordinary shares of R10 each	900
Non-current assets	**450**
Debentures	450
Total equity and liabilities	**1 350**

Additional information:

A dividend of R1,10 has been declared and paid during the financial year ending 31 May 20x1. Due to expansion, dividends are expected to grow at 4% per year from 1 June 20x1 for the foreseeable future. The current market price per share on 1 June 20x1 is R10,40.

Vuju's Steelwork Limited has a beta of 1,5. The market rate of return is 12%, and the risk free rate is 6%.

There are currently 1 000 000 debentures in issue at face value of R450 each. The debentures are redeemable after eight (8) years at face value. The coupon interest being paid is R90 (before tax) per debenture. The debentures are currently trading at R486,68.

The corporate tax rate for the foreseeable future is 28%.

REQUIRED

a. Calculate the current cost of equity using the capital asset pricing model (CAPM).
b. Calculate the current cost of equity using the dividend growth model.
c. Calculate the current effective cost of the debentures. (Use your financial calculator.)
d. Calculate the weighted average cost of capital (WACC) for Vuju's Steelwork Ltd by using the cost of equity (k_e) as determined in a. by means of the CAPM and effective cost of debt (k_d) as determined in c.

[Round percentages in a – c to the nearest full percentage.]

Feedback on comprehensive self-assessment question 2

a. Cost of equity using CAPM

$k_e = R_f + \beta(R_m - R_f)$
$k_e = 0,06 + 1,5(0,12 - 0,06)$
$k_e = 0,06 + 1,5(0,06)$
$k_e = 0,06 + 0,09$
$k_e = 0,15$ (or 15%)

b. Cost of equity using the dividend growth model

$$k_e = \frac{D_1}{P_0} + g \quad [\text{and } D_1 = D_0(1+g)]$$

$$k_e = \frac{R1,144 \text{ (calc.1)}}{R10,40} + 0,04$$

$= 0,11 + 0,04$
$= \underline{0,15}$ (or 15%)

① $D_1 = D_0 \times (1 + g)$ = the expected dividend per share for year 1
$= R1,10 \times (1,04)$
$= R1,144$

c. After tax cost of debentures

Calculate the effective after-tax cost of debt with your financial calculator.

SHARP EL-738		Hp10BII	
Initial outflow = R486 680 000[①]. Number of PMT's/cash flows = 7 of R90 000 000 and at the end of year 8 = R90 000 000 + R450 000 000 (redemption value end year 8) = R540 000 000			
Key in:	Display will read:	Key in:	Display will read:
Clear all registers first: CFi 2ndF CA	0.0000	2ndF C ALL 3rdF C MEM 0	1 P_YR then 0.0000 c FLo clr then 0.0000
Enter data sets: +/– 486680000 ENT	DATA SET:CF 0.0000	486680000 +/–CF_j	CFLO/CF–486,680,000.0000
90000000 (x, y) 7 ENT	DATA SET:CF 1.0000	90000000 INPUT 7 CF_j	90,000,000.0000 7.0000
540000000 ENT	DATA SET:CF 2.0000	540000000 CF_j	CFLO/CF 540,000,000.0000
Clear cash flow registers: ON/C 2ndF CASH 2ndF CA	0.0000 RATE(I/Y) = RATE(I/Y) = 0.0000		
and **press COMP to get the IRR**	RATE(I/Y) = 18.0009	2ndF IRR/YR	18.0009

The effective after tax cost of debt is now:

k_d = 18% x [1 – t]
= 18% x [1 – 28%]
= 12,96%
= 13% (rounded to full percentage)

① Initial outflow (current market value) = 1 000 000 x R486,68 = R486 680 000

d. Calculation of WACC

$$WACC = \frac{k_e v_e + k_d v_d}{v_e + v_d}$$

NOTE

Remember that we need to calculate the market values (and not use the book values as stated in the statement of financial position of the organisation) for the weighting of the components.

Market value of equity (v_e):

Current market price: given as R10,40 per share.
Number of shares: 90 000 000 shares as per statement of financial position.

v_e = 90 000 000 x R10,40
v_e = **R936 000 000**

Market value of debt (v_d):

As calculated in (c) = R486 680 000

Using the formula:

$$WACC = \frac{k_e v_e + k_d v_d}{v_e + v_d}$$

The individual component costs, k_e and k_d to be used in the WACC formula were already established in section a. and c. of this activity and the market values as above.

$$WACC = \frac{(15\% \times 936\,000\,000) + (13\% \times 486\,680\,000)}{936\,000\,000 + 486\,680\,000}$$

$$WACC = \frac{140\,400\,000 + 63\,268\,400}{1\,422\,680\,000}$$

$$WACC = \frac{203\,668\,400}{1\,422\,680\,000}$$

WACC = 0,1432

WACC = 14,32%

WACC = 14% (rounded to full percentage)

Or

$$WACC = k_e \times \frac{v_e}{v_e + v_d} + k_d \times \frac{v_d}{v_e + v_d}$$

Type of capital	Total amount at market values		% of total capital (weight)	Cost of capital	Weighted cost of capital
Share capital	936 000 000	(936 000 000 ÷ 1 422 680 000)	65,79%	15%	9,87%
Debentures	486 680 000	(486 680 000 ÷ 1 422 680 000)	34,21%	13%	4,45%
	1 422 680 000		100%		**14,32%**

QUESTION 3

Extract from the statement of financial position of Khumaba (Ltd):

	R
Ordinary issued shares	5 000 000
Non-distributable reserves	500 000
Retained income	3 400 000
Debentures at 15%	6 000 000
Long-term loan at 12%	1 000 000
	15 900 000

Additional information:

There is currently 1 000 000 shares in issue.

The current dividend is R1,50 per share.

The expected growth in dividends is 5%.

The shareholders required rate of return is 18%.

The debentures mature in 10 years time and the coupon rate thereon is 15%.

The market interest rate for similar debentures is 20%.

The long-term loan agreement provides that interest is charged at 12%. The current JIBAR rate for similar loans is 13% (after tax).

The tax rate is 28%.

REQUIRED

Use the information above and calculate the WACC of Khumaba (Ltd) at market value.

Feedback on comprehensive self-assessment question 3

Calculation of WACC at market value:

① Market value of equity P_0

$$P_0 = \frac{D_1}{k_e - g}$$

$$P_0 = \frac{1,58}{0,18 - 0,05} \quad [\text{where} \quad D_1 = 1,50(1 + 0,05) = 1,58]$$

$$P_0 = \frac{1,58}{0,13}$$

P_0 = R12,12 per share

∴ 1 000 000 shares x R12,12

= R12 120 000

② Market value of debt k_d (debentures)

Firstly calculate the market value of the debentures.

k_d or i = current market rate (pre-tax) = 20%

I = 15% x R6 000 000 = R900 000

R = R6 000 000

n = 10

Then:

$$M_v = I \times \left\{ \left[\frac{1 - \frac{1}{(1+i)^n}}{i} \right] \right\} + \left[\frac{R}{(1+i)^n} \right]$$

$$= R900\,000 \times \left[\frac{1 - \frac{1}{(1+0{,}20)^{10}}}{0{,}20} \right] + \left[\frac{6\,000\,000}{(1+0{,}2)^{10}} \right]$$

$$= R900\,000 \times \left[\frac{1 - \frac{1}{6{,}1917}}{0{,}20} \right] + \left[\frac{6\,000\,000}{6{,}1917} \right]$$

$$= R900\,000 \times \left[\frac{1 - 0{,}1615}{0{,}20} \right] + R969\,039{,}1976$$

$$= R900\,000 \times \left[\frac{0{,}8385}{0{,}20} \right] + R969\,039{,}1976$$

= (R900 000 x 4,1925) + R969 039,1976

= R3 773 250 + R969 039,1976

= R4 742 289,198

= R4 742 298 (rounded to nearest rand)

The after tax cost of debt now is:

k_d = 20% x [1 – t]

= 20% x [1 – 28%]

= 14,4%

= 14% (rounded to full percentage)

Calculation of WACC:

Type of capital	Total amount at market values	% of total capital (weight)	Cost of capital③	Weighted cost of capital
	R	%	%	%
E: Equity – Ordinary shares	12 120 000	E/V 67,85	18③	12,21①
+ D: Debt – Debentures	4 742 298	D/V 26,55	14④	3,72②
+ D: Debt – Long-term loan (book value)	1 000 000	D/V 5,60	13	0,73⑤
= V: Value	17 862 298	100		16,66 17,00 (rounded)

Calculations:

① 67,85% x 18% = 12,21%
② 26,55% x 14% = 3,72%
③ 18% shareholders required return – given
④ 14% cost of debt after-tax (20% x 72%)
⑤ 5,6% x 13% = 0,73%

NOTE

Remember to include ALL long-term debt instruments in the weighting.

As explained before, we will leave unlisted long-term loans at book value for purposes of calculating the weightings.

The market value of the ordinary equity represents the owners' total interest at current market prices. You do not have to add the reserves to the capital structure again!

References and additional reading

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Ross, SA, Westerfield, RW & Jaffe, J. 2005. *Corporate finance*. 7th edition. New York: McGraw-Hill.

http://www.treasury.gov.za/divisions/alm/2004/What%20are%20RSA%20Bonds.pdf [Accessed 23 February 2012.]

http://en.wikipedia.org/wiki/JIBAR [Accessed 23 February 2012.]

http://en.wikipedia.org/wiki/LIBOR [Accessed 23 February 2012.]

ACCOUNTING RATE OF RETURN:	This is based on an investment's (project's) average net PROFIT after tax (not cash flow), divided by its average book value. It is also called the average rate of return on investment/capital (ROI or ROC) method.
ACCOUNTS PAYABLE (CREDITORS) DAYS:	Payable days (or the creditor payment period) is the measurement of the average number of days the organisation takes to pay for the goods/services received on credit from its suppliers.
ACCOUNTS RECEIVABLE:	Accounts receivable refers to the amount outstanding in respect of previous credit sales that customers/debtors have to pay in the near future.
AGEING SCHEDULE FOR CREDITORS:	Ageing schedule (or creditors' age analysis report) is a classification of accounts payable within bands of different outstanding periods, normally including current debt, up to and including 30 days, up to and including 60 days, up to and including 90 days, and greater than 90 days.
AGEING SCHEDULE FOR DEBTORS:	Ageing schedule (or debtors' age analysis report) is a classification of accounts receivable within bands of different outstanding periods, normally including, current debt, up to and including 30 days, up to and including 60 days, up to and including 90 days, and greater than 90 days.
ANALYSE:	To analyse is to examine in detail in order to discover meaning or to break down into smaller parts.
ANNUITY DUE:	An annuity where the payments fall due at the beginning of each payment interval (period) is an annuity due. The last payment of an annuity due is one payment before the end of the term.
BANK LOAN:	Medium and smaller companies mainly use bank loans for long-term financing. The loan may be a term loan that is repayable over a fixed period that relates to the specific financing requirement or the loan can be structured in the form of a loan facility from which the company draws down as needed (the money is only advanced by the bank when the client needs it to make a payment to a supplier, etc, up to the maximum loan amount approved). The costs involved (apart from the repayment of the capital amount) are interest charges as well as a charge for the right to use the loan facility.
BANK OVERDRAFT:	A bank overdraft is the facility that allows an organisation to use more money than is available in its bank account.
BANKER'S ACCEPTANCES (BA's):	A banker's acceptance is created when the organisation sells a bill of exchange to the bank.

BARRIERS TO ENTRY:	Barriers to entry are factors that prevent new players to enter a specific industry or market. These factors refer to the position of the current players, for example, they have good economies of scale, customers are loyal to their brand, and they have a well-established distribution channel.
BARRIERS TO EXIT	Barriers to exit are factors that prevent an organisation from leaving (exiting) the market for a specific product. If the cost of exiting is higher than the cost (losses) of remaining in the market, the organisation will be prohibited from exiting and will still be competing for market share.
BOARD OF DIRECTORS:	The board of directors (the board) consist of members/ directors who are elected to the board by the shareholders to oversee the activities of the organisation and to provide stewardship and leadership from the very top.
BOND/DEBENTURE:	A bond/debenture is a long-term contract between the organisation that issues the bond/debenture (borrower), and the buyer of the bond/debenture (lender of the money or investor). The main terms of this contract are the repayment conditions and the interest rate to be paid.
BUSINESS RISK:	Risks that arise from the activities of the organisation and relate to the people, processes, products and structure.
CAPITAL:	Capital is a long-term asset or the money used to support long-term assets and projects and is displayed as long-term debt and equity on the statement of financial position.
CAPITAL GROWTH:	Capital growth is the growth of an investment in a business. It means that the investment can be sold after a few years for more than it was bought for. Capital growth includes minimum annual returns.
CAPITAL INVESTMENTS/ EXPENDITURE:	Long-term assets (eg non-current) such as property, plant and equipment acquired individually or as part of large projects that generate returns (cash inflows) over a number of years.
CAPITAL MARKET:	A capital market is a financial market in which longer-term (longer than one year) debt and equity securities are traded.
CAPITAL STRUCTURE:	Capital structure is the manner in which an organisation's assets are financed. It is normally expressed in percentages of each type of capital used by the organisation, such as debt and equity.
CASH AND CASH EQUIVALENTS:	Cash is the money the organisation has on hand (eg petty cash, unbanked payments received) as well as the money in the bank (eg cheque accounts or short-term deposits).

CASH CONVERSION CYCLE:	The cash conversion cycle focuses directly on the cash flow associated with the overall cash flow from operations (including accounts payable). It represents the length of time between when an organisation makes payments to its creditors (outflow of cash) and when an organisation receives payments from its customers (inflow of cash). As the cash conversion cycle includes the cash flow benefit afforded by accounts payable, this cycle is shorter than the operating cycle.
CASH FLOW:	Cash flow is any receipt or payment of money that occur at a specific point in time. It includes capital and interest.
CLOSE CORPORATION:	A close corporation (CC) is a business that is formed as a legal person that exists separate from its owners. A maximum of ten owners, called members, which must be natural persons, are allowed.
COMPANY:	A company is a business form that is a legal organisation distinct from its "owners"."Owners" are referred to as shareholders and can be one or more individuals or organisations.
COMPLIANCE RISK:	These risks arise from non-compliance with legislation or regulations.
COMPOUNDING:	Compounding refers to the calculation of interest on a principal (initial) amount and adding that interest to the principal for investment in the following period. The interest is therefore not paid at the end of the period in which it accrues. In the next period(s), interest is earned on the interest re-invested.
CORE VALUES:	Core values are the principles that guide an organisation by describing how every employee is expected to behave.
CORPORATE CULTURE:	Corporate culture entails employees' shared beliefs, values and symbols (see also core values).
CORPORATE GOVERNANCE:	Corporate governance is a set of processes, customs, policies, laws and institutions affecting the way that a business is managed. It also includes the relationships among the many stakeholders involved and the goals of the business.
COST OF CAPITAL:	Cost of capital is defined as being the rate of return that an organisation must earn on its investments to ensure that the minimum requirements of the providers of capital are met.
COUPON INTEREST RATE:	This is the fixed interest rate that the issuing organisation is required to pay on the face value of the bond. This is similar to the coupon payment divided by the par value.

CREDIT RATING AGENCY:	A credit rating agency is an organisation that provides international financial research on bonds and other debt instruments issued by business and government organisations. The agency ranks the creditworthiness of borrowers/issuers by using a standardised ratings scale. The payment history as well as financial heath (ability to pay future obligations) is taken into account in determining the credit rating.
DILUTION:	Dilution occurs when new ordinary shares are issued. The existing shareholders must then share the control of the organisation with a greater number of shareholders. The control (voting power) that the existing shareholders had over the organisation will be diluted due to the increase in the number of shareholders.
DISCOUNTING:	Discounting is the process used to determine the original investment (principal) amount by discounting the future value, which resulted from the compounding of interest, back to the present value. (Discounting is thus used to determine the present value of an investment.)
DIVIDEND YIELD:	The dividend yield on an organisation's share is the organisation's total annual dividend payments divided by its price per share. The dividend yield can also be determined by finding a comparable dividend yield from a similar share and adjust it for growth and risk.
DU PONT RATIO:	Du Pont ratio is a method that breaks down the return on total asset ratio (ROA) into two components – a profit margin and an asset turnover rate.
ECONOMIC RISK:	Economic risks are directly related to risks that originate from activities or non-activities in the normal economy. This includes changes to inflation, the unemployment rate and international policy. These economic risks start before transactions take place and are considered to be external.
EFFECTIVE ANNUAL INTEREST RATE:	Effective annual interest rate (EAR) refers to the annual rate, which derives the same result as the compound interest rate, at a given periodic rate, for a given number of compounding periods PER year. The effective annual rate is therefore the annual rate, which, if compounded once a year, will give the same result as the interest per period compounded a number of times per year.
ENVIRONMENTAL RISK:	The risk relates to climate change and risk of natural disasters (deemed to be external risks). The risk of damage caused by a pollutant, that is a substance or by-product introduced into an environment other than its intended use/ purpose (deemed to be within the organisation's control).

EXTRAPOLATION:	Extrapolation refers to the calculation when you need to determine an actual rate where this actual rate lies outside (not within) two specific rates.
FACTORING:	Factoring is a form of debtors financing which results in improving the debtors' collection period.
FINANCIAL INFORMATION:	Financial information refers to the financial results, position and cash flows of an organisation's business operations in a specific period, stated in rand and cent terms.
FINANCIAL LEVERAGE:	Financial leverage is the extent to which debt is used in the capital structure of an organisation. (An organisation that has a high percentage of debt in its capital structure will be regarded as having a high degree of financial leverage.)
FINANCIAL RISK:	Financial risk relates to the financial operation and position of an organisation.
FUTURE VALUE:	The future value is the amount that an investment will be worth at a future date if invested at a particular simple or compound interest rate.
GROWTH RATE:	Growth rate simply refers to the percentage that a line item in an organisation's financial information has increased or decreased from one period/year to another.
HOLDING COSTS:	Holding costs are the costs of holding inventory and includes storage costs (eg renting warehouse space and security), insurance costs (for protection against losses), cost of obsolescence (inventory ageing or deteriorating whilst in storage) and opportunity cost (funds invested in inventory could have earned a return elsewhere at a certain rate, eg earning the weighted average cost of capital).
HUMAN RESOURCES:	The term human resources (HR) refer to the workforce (employees) of an organisation.
INDUSTRIAL RELATIONS:	Industrial relations deal with the employment relationship (workplace relationships).
INFORMATION RISK:	Information risk is the risk that decision makers within the organisation use invalid or poor quality information for decision-making, or the loss of information.
INHERENT RISK:	This involves the assessment of risk before the application of any controls, transfer or management responses.
INSTALMENT SALE AGREEMENT (ISA):	An instalment agreement entails the granting of a loan to an organisation (buyer) by the supplier (seller) of assets such as machinery, equipment and vehicles itself (supplier credit), or granted by banks. The conditions, interest rate, instalment amount and frequency of payment as well as the period of the agreement are set out in the specific contract.

INTEREST:	Interest is the price paid for borrowed money or received for money invested.
INTERNAL RATE OF RETURN:	The rate at which cash flows must be discounted so that the present value of the cash inflows equals the present value of the initial cash outflow. That is the rate at which the NPV will be equal to Rnil.
INTERPOLATION:	Interpolation refers to the calculation when you need to determine an actual rate, where the actual rate lies between two specific rates.
INVENTORY:	Inventory of a reseller is represented by purchased goods (held to be sold), and of a manufacturer by the completed products (held to be sold), work-in-process products (intended for sale) and raw material inventory (held for use in production). Both types of organisations can also have stores of consumable items.
INVENTORY DAYS:	Length of time that inventory remains unsold (goods for sale) or remains unused (raw materials).
LEASE:	A lease is a form of financing movable assets. Just like a loan, it can be structured in various ways. The lessor (granting the lease) remains the owner of the asset, while the lessee has the use of the asset. Lease payments are determined in such a way as to offer the lessor the cost of the asset plus a reasonable return thereon.
MARKET RATE / RULING INTEREST RATE:	The market rate is the current or ruling market rate of return. It is obtained from similarly publicly traded instruments – a pre-tax rate.
MARKET RISK:	Risk associated with the economical environment in which all organisations do business and which is influenced by interest rates, exchange rates, oil prices and various other factors that are difficult to quantify. Market risk therefore originates from events and transactions in the market place.
MATURITY DATE / REDEMPTION DATE:	The maturity date is the date when a bond/debenture will be redeemed.
MISSION STATEMENT:	A mission statement defines the core purpose of the organisation, by broadly stating the reason(s) why the organisation exists.
MONEY MARKET:	The money market is a financial market used mainly for raising short-term (of less than one year) finance.
MORTGAGE LOAN:	Mortgage loans are long-term loans raised against the value of property. The loan is normally secured over the value of the property offered as security.
NET PRESENT VALUE:	Net result of future periodic net after tax cash flows discounted to present value, using an appropriate rate, and the present value of the capital invested in the project.

NET WORKING CAPITAL:	Net working capital refers to the current assets less current liabilities, which is directly related to the operating activities of an organisation.
NOMINAL ANNUAL RATE:	In cases where interest is calculated more than once a year, the annual rate quoted is the nominal annual rate or nominal rate.
NOMINAL INTEREST RATE:	This is the named or quoted rate usually stated on annually compounded basis. It may be different from the effective rate due to non-annual compounding.
OPERATING CYCLE:	The operating cycle focuses on an organisation's internal (thus excluding accounts payable) cycle's impact on cash flow. It represents the length of time from committing cash for purchases of inventory to the inflow of cash from the sale of inventory on credit.
OPERATIONAL RISK:	"Operational risk is the risk of loss from a failure of internal business and control processes."
OPPORTUNITY COST:	Opportunity cost is the cash that could have been realised from the best alternative use of the funds that were given up.
ORDERING COSTS:	Ordering costs are the costs associated with placing an order, receiving the deliveries and the associated payment.
ORDINARY ANNUITY:	An ordinary annuity is an annuity where the payments take place at the end of each year or period (payment interval) at the same time that interest is calculated.
ORDINARY PREFERENCE SHARE:	An ordinary preference share is a security that pays a constant dividend into perpetuity (if not convertible or redeemable).
ORDINARY SHARE:	This is a security offered to investors in order to raise capital for the company. Investors receive dividends as return on their investment as well as capital growth if the share price increases and they sell their shares.
ORGANISATIONAL STRUCTURE:	The structure of a business can be defined as organisational arrangements, systems for gathering together human, physical, financial, and information resources at all levels of the system.
PARTNERSHIP:	Partnership is where a business is formed by between two and twenty individuals or organisations. It is unincorporated. Partners are severally and jointly responsible for all the debts of the partnership.
PAR VALUE/ REDEMPTION VALUE/ NOMINAL VALUE/ FACE VALUE:	Par value is the stated value (nominal or face value) of bonds /debentures. This is the value which the holder will receive at redemption and also the value on which the bond or debenture pays interest.
PAYBACK PERIOD:	The period of time required to recoup the total capital amount invested through the cash generation from the project.

PERIODIC PAYMENT:	The periodic payment I or PMT, is the amount of the annuity, namely the stream of equal amounts, invested per period or the equal periodic repayments of a loan.
PERIODIC RATE:	The periodic rate is the rate charged by a lender or paid by a borrower each period.
PERMANENT WORKING CAPITAL:	Permanent working capital supports a constant minimum level of sales.
PERPETUITY:	Perpetuity means that the cash flow will be received or paid periodically at certain time intervals into infinity, since there is no termination date. Another example of a perpetuity would be a non-redeemable preference share paying a fixed dividend.
POLITICAL RISK:	Refers to the effect that detrimental political activities or political instability have on an organisation.
PRESENT VALUE:	The present value is the current value of future cash flows, determined by application of the discount rate (discounting).
PROFITABILITY:	Profitability is the term used to describe the annual return or compensation earned on an investment.
PROFITABILITY INDEX (PI):	The PI is the ratio of the present value of cash flows (PVCF) to the initial investment of the project. PI is also known as a benefit/cash ratio.
PROJECT ANALYSIS:	Project analysis is the detailed examination of all the technical specifications (operational), marketing (sales units, market, etc) and financial aspects (costs and revenues) and/or problems of a project before funds are allocated and work on it is started.
RATIO ANALYSIS:	Ratio analysis is a method whereby further calculations are performed on a set of financial statements and is intended to create more meaningful information. Ratio analysis can be made even more useful when we compare the calculated ratios to the same ratios calculated for previous years or to industry norms and other ratios of the same set.
RECEIVABLE DAYS:	Receivable days (or the debtor collection period) is a measurement of the number of days it takes the average debtor to pay for the goods/services taken on credit.
REPORTING RISK:	The risk refers to the provision of unreliable financial and non-financial information to all levels of management and other stakeholders.
REPUTATION RISK:	A loss of reputation is the adverse consequence created by bad publicity due to the materialisation of another risk.
RESIDUAL RISK:	Residual risk involves the assessment of risk AFTER taking into account the application of any internal controls, transfer or management responses to reduce the risk.

RETURN ON ASSETS (ROA):	This is a measure of performance generated on all the assets employed in the organisation and expresses earnings before interest and taxes (EBIT) as a percentage of the total assets employed.
RETURN ON EQUITY:	This is a measure of the performance realised by management for the equity holders (shareholders) and expresses net profit as a percentage of equity.
REVOLVING CREDIT:	Revolving credit allows the organisation to withdraw money up to the original limit once a certain percentage (20% to 30%) has been repaid.
RISK:	The typical dictionary definition of risk is a chance or possibility of danger, loss, injury or other adverse consequences.
RISK APPETITE:	The risk appetite is related to an organisation's strategy and may be expressed as the acceptable balance between growth, risk and return.
RISK ASSESSMENT:	Risks are analysed by considering the impact (potential damage or loss) and likelihood of the risk occurring. Risks are assessed at an inherent basis (risk exposure before considering risk responses) and residual basis (risk exposure after considering risk responses).
RISK CAPACITY:	This is the maximum amount of risk that the organisation can accept.
RISK CULTURE:	This is the set of shared attitudes, values and practices that characterise how an organisation considers risk in its day-to-day activities.
RISK FINANCING:	Maintaining a balance between the economic and operational cost of risk reducing measures and the achievement of the organisation's objectives.
RISK IDENTIFICATION:	The process to identify internal and external events, which could affect the achievement of the organisation's objectives. This includes risks and opportunities.
RISK MANAGEMENT PLAN:	It is the document of identified risks (derived with reference to the organisation's objectives) with the corresponding risk assessment to create risk responses.
RISK MONITORING:	Risk monitoring entails the continuous evaluation of the organisation operations to ensure the adequacy of control measures and to identify new risks to the organisation.
RISK OR EVENT IDENTIFICATION:	Risk or event identification is the process to identify internal and external events, which could affect the achievement of the organisation's objectives. This includes risks and opportunities.
RISK REGISTER:	A risk register is a summary of identified risks, which are listed, described and assessed/measured (based on their potential impact and likelihood).

RISK REPORTING:	Risk reporting is concerned with periodic (usually quarterly) reports to the stakeholders and the board of directors or a sub-committee of the board, such as the risk and compliance committee, setting out the organisation's risk management policies and to provide information for the stakeholders to evaluate whether the policies are effectively achieved.
RISK RESPONSE:	Measures to reduce the likelihood and/or impact rating of a risk event.
RISK-FREE RATE:	The risk-free rate is the return that can be earned on investments that has zero risk. An example of a risk-free instrument is government bonds and the return thereon will represent the risk-free rate.
RULING INTEREST RATE / MARKET RATE:	The market rate is the current or ruling market rate of return. It is obtained from similarly publicly traded instruments – a pre-tax rate.
SALE AND LEASEBACK:	Trading organisations who own fixed property at times find it more rewarding to sell the properties to a financial institution at a capital profit. A leaseback agreement for a reasonably long term is then entered into immediately, to protect the trading organisation (which operates from this premises) – the period can sometimes be as long as 30 years.
SHORT-TERM:	Short term refers to a period of one year or less.
SIMPLE INTEREST:	Simple interest is the interest calculated on the principal only for the entire term.
SINGLE CASH FLOW:	A single cash flow is a once-off (non-repetitive) cash inflow or outflow.
SOCIAL RISK:	Social risk relates to the impact of the organisation on the community and vice versa.
SOLE PROPRIETORSHIP:	Sole proprietorship is where a business is formed by a single individual who is the owner of that organisation. It is unincorporated, meaning the owner and the business is treated as the same legal persona.
SPECIFIC RISK:	This is the risk associated with an investment in a specific company.
STAKEHOLDERS:	Stakeholders are those persons and organisations that are affected by the activities of the organisation and therefore have an interest in the strategy of an organisation. Stakeholders include staff, shareholders, creditors, suppliers, customers, government, local authorities, professional bodies, pressure groups and the community at large.

STRATEGIC FINANCIAL MANAGEMENT:	Strategic financial management is the identification of possible strategies capable of maximising an organisation's net present value, the allocation of scarce capital resources among the competing opportunities and the implementation and monitoring of the chosen strategy so as to achieve stated objectives.
STRATEGIC OBJECTIVES:	Strategic objectives clearly formulate measures of progress and targets to be achieved in a specific time frame.
STRATEGIC PLANNING:	Strategic planning is the process of defining the organisation's strategy and making decisions about the allocation of its resources to follow this strategy. The allocation of resources includes the organisation's capital and people.
STRATEGIC RISK:	Strategic risks have more to do with the organisation's position and relation with the external environment in the long-term.
STRATEGY:	Strategy is about choosing long-term activities to achieve the purpose set out in the mission statement and ultimately moving towards realising the vision.
SUBSTITUTE PRODUCTS:	Substitute products refer to alternative products having the ability of satisfying customers' needs effectively (for example, plastic bottles instead of glass bottles).
SUSTAINABILITY FOR BUSINESSES:	Sustainability for a business means that all their products, processes and manufacturing activities meet customer needs, while at the same time treating the environment in such a manner that it does not decrease the ability of future generations to meet their own needs. This entails that products, processes and activities should be designed and executed in such a way that current environmental concerns (eg the use of renewable resources) are taken into account while still maintaining a profit. A business should use sustainable development and distribution methods to influence the environment, growth of the business and society. Sustainable development within a business can create value for its investors, customers and the environment.
SUSTAINABILITY FOR HUMANS:	Sustainability for humans is the potential for long-term maintenance of well-being which has environmental and social dimensions.
SUSTAINABLE CAPITAL BUDGETING:	Sustainable capital budgeting involves planning and evaluation of how funds are spent on capital investments that will ultimately add to the organisation's value while taking cognisance of the social, environmental and governance impact of the decision.
SWOT ANALYSIS:	The SWOT analysis approach is to identify and analyse internal and external factors that are of strategic importance, and classify them into strengths, weaknesses, opportunities and threats.

TAKE-OVER:	Take-over is the term used when referring to the transfer of control of a company from one group of shareholders to another group of shareholders.
TARGET CAPITAL STRUCTURE:	Target capital structure or optimal capital structure is a mix of the two capital components at which the share price is maximised – if all other things are kept the same.
TECHNOLOGICAL RISK:	Risk involved with the operation, ownership and sustainability of the organisation's information technology (IT) systems. Technological risks also refer to the manufacturing plant being outdated or a product being obsolete when a more technologically advanced product has replaced it.
TEMPORARY WORKING CAPITAL:	Temporary working capital supports seasonal peaks in the organisation's operations.
TRADE ACCOUNTS PAYABLE:	Trade accounts payable refers to the amount of purchases on credit that has to be paid to the suppliers/creditors in the near future. Total accounts payable may also include other accounts payable, which do not relate directly to the main operations (trading activities) of the organisation.
TRADITIONAL FINANCIAL MANAGEMENT:	Traditional financial management is the management and control of money and money-related operations within a business. Financial management therefore includes planning, organising and controlling the financial activities of a business. The financial activities include the acquiring of funds as well as the use of these funds by applying general management principles.
UNEQUAL CASH FLOW:	Unequal cash flows can occur repetitively at the end of each year or period (payment interval).
VISION STATEMENT:	The vision statement defines where the organisation wants to go in the future.
WORKING CAPITAL MANAGEMENT:	Working capital management refers to the controlling of balances included in the current assets and current liabilities, the way the related functions within the organisation are performed and the way working capital is financed.
WORKING CAPITAL POLICY:	The working capital policy of an organisation stipulates the appropriate amount for the net working capital balance and for each of its components (investment policy), and, in addition, how the net working capital balance should be financed (financing policy).
YIELD TO MATURITY (YTM):	The discount rate that achieves a net present value (NPV) of NIL for all the cash in- and outflows.