Financial Management 2 (FM202)

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Section A

1. Word of welcome

Welcome to Financial Management 2, a central part of the management function in the organisation. Financial management means planning, organising, directing and controlling the financial activities such as procurement and utilisation of funds of the organisation. It means applying general management principles to financial resources of the organisation.

From a marketing perspective it is important to understand how the activities you pursue will be affected by the finance function, such as the organisation’s cash and credit management policies, ethical behaviours, role of financial markets in raising capital as well as other financial issues.

In this learner guide you will find a structured and integrated schedule of learning material, tutorial notes, timelines and self-assessment questions. In order to assist you in planning and managing your studies, the learner guide has been structured according to

- an organisational component (Section A), and
- a learning component (Section B).

The purpose of the organisational component is amongst other things to orientate you towards financial management and to inform you about administrative issues, whilst the purpose of the learning component is to structure the syllabus in terms of manageable study units. The learning component will explain what topics are covered, in how much depth, where to find relevant information pertaining to the subject and ultimately help you to study the subject as realistically and practically as possible.

To ensure you get the maximum benefit from the study time you have available it is recommended that you work through the learner guide. This will help you identify both the time you will need to complete the programme and by doing this you will be able to draw up a detailed and workable study schedule.
Everyone connected with marketing should be well informed about finance because financial decisions influence every aspect of business operations. Financial management is a fascinating and enjoyable subject and it provides frameworks and techniques you will be able to apply in your day-to-day marketing work as well as personal life.

2. How to use this guide

The learner guide is especially designed for a student who studies at a distance. The guide will provide an overview of the total curriculum and will indicate the learning outcomes, which are essentially the core of this guide. It will provide you with each major topic that has to be covered, along with the learning outcomes for each topic, which are systematically explained. The guide will also indicate how the learning material must be prepared for examination.

The learner guide should be studied in conjunction with the textbook and does not replace the textbook.

In each study unit you will find some typical examples of examination questions which should be used for self-evaluation.

The following icons appear in all of the learning guides of the IMM Graduate School of Marketing:

- Indicates learning outcomes.

- Indicates the sections in the prescribed textbook that you need to study.

- Indicates the self-evaluation questions.
3. The overall purpose of the subject

The fundamental aim of this course is to equip you with a thorough understanding of important financial concepts. These concepts are important and are applied to and integrated with other areas of learning within the marketing field of study.

The overall course objectives for the Financial Management 2 module are to develop financial literacy on a theoretical and practical level, by

- explaining the role and environment of financial management,
- analysing financial statements,
- learning more about cash flows and financial planning,
- learning how to place a value on future cash flows,
- discussing working capital issues.

The emphasis in Financial Management 2 is on the role of financial management, valuation and working capital management. In FM303 the emphasis will move to planning and control with reference to the non-current assets and the capital structure of an organisation.

4. Pre-knowledge

It is essential that you are competent in mathematics at NQF level four. If you are not confident in your mathematical abilities at this level, it is strongly recommended that you improve or refresh your basic mathematical knowledge and skills. There are a number of organisations offering short skills programmes in mathematical literacy.

You should know or be able to do the following:

- Know the order of mathematical operations
- Work with formulas
- Calculate, compare and critique ratios
- Calculate percentages
- Construct, read and interpret graphs and charts.
We will provide you with brief explanations in your learner guide where it is deemed necessary. It is, however, not possible to create a comprehensive mathematical guide within this text.

You can also refer to the following book related to business calculations:


**NB:** You will also need to use a financial calculator.

An ability to use spreadsheets, such as MS Excel, to do financial calculations, and to create charts and graphs is an added advantage.

You should also have passed Financial Management I (FM101), as the basic concepts dealt with in FM101 provide important foundations for this subject.

5. **The relationship with other subjects**

Financial Management 2 should not be seen as a subject on its own, but in the context of the diploma/degree as a whole, since a number of concepts are also dealt with in other courses.

This course covers fundamental financial concepts that you are required to know on a theoretical and practical level. The terminology and other topics included are integrated with other IMM GSM subjects, which in turn, help you to identify and recognise your prior learning.

Finance as a topic can be boring if you don’t understand the concepts. However, it can be an interesting topic or course when being studied in the marketing context because marketing strategy affects the financial performance of the organisation by generating sales and incurring costs.
6. The NQF level and number of credits

This module forms a compulsory module for the Diploma in Marketing Management and the BBA in Marketing Management.

In terms of the National Qualifications Framework (NQF) it is designed as a 20-credit module offered on NQF level 6.

The IMM Graduate School of Marketing regards Financial Management 2 as a second year subject.

7. Prescribed textbook and resources required

The prescribed textbook for this module is:


The textbook is written in a clear and systematic manner. Always start your studies by consulting the learner guide and then study the relevant sections in the prescribed textbook. It is unlikely that you will pass this module if you have only consulted the learner guide without studying the content of the textbook.

The following textbooks are also recommended:


We would also like to encourage you to make a habit of reading business and financially orientated literature, magazines and newspapers such as:

1. Business Day
2. Financial Mail
3. FinWeek

The IMM Marketing Information Centre specialises in the provision of information for your project and work related needs. They have

- over 1500 marketing related books,
- prescribed and recommended IMM GSM textbooks,
- a range of over 30 marketing and business related journals.

**Calculators**

You will need a financial calculator that is typically used at universities; one that can perform a variety of functions, including fraction calculations, percentage calculations, scientific and statistical calculations as well as time value of money calculations.

Below are examples of two kinds of financial calculators in general use in the RSA. Your textbook has a supplementary booklet dealing with the use of financial calculators.

![Sharp EL-733A](image1.png) ![HP 10B](image2.png)
8. **Curriculum**

This section addresses the overall content of the module. The Financial Management 2 curriculum is divided into six study units. The six study units with the corresponding chapters in the prescribed textbook are as follows:

<table>
<thead>
<tr>
<th>Study Unit</th>
<th>Description</th>
<th>Relevant Chapters</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The role and environment of financial management</td>
<td>Chapter 1</td>
</tr>
<tr>
<td>2</td>
<td>Analysis of financial statements</td>
<td>Chapter 2</td>
</tr>
<tr>
<td>3</td>
<td>Cash flow and financial planning</td>
<td>Chapter 3</td>
</tr>
<tr>
<td>4</td>
<td>Valuation of future cash flows: The time value of money</td>
<td>Chapter 4</td>
</tr>
<tr>
<td>5</td>
<td>Valuation of future cash flows: Bond and equity valuation</td>
<td>Chapters 6 and 7</td>
</tr>
<tr>
<td>6</td>
<td>Short-term financial decisions</td>
<td>Chapters 14 and 15</td>
</tr>
</tbody>
</table>

9. **A description of the core syllabus, learning units and outcomes/objectives**

The aim of this course is to emphasise the need for financial literacy on the part of the marketing specialists. This will be done by developing your ability to interpret financial reports, to apply basic financial techniques to marketing operations and to understand the essential nature of the valuation of future cash flows and the role of working capital in the day to day operations of an organisation.
## Description of study units

<table>
<thead>
<tr>
<th>Study Unit</th>
<th>Description</th>
<th>Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Explain the role of financial management in an organisation</td>
<td>After studying this unit, you should be able to:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Define financial management in your own words.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Describe the function of a financial manager and its relationship to economics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and accounting.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Identify the primary activities of the financial manager.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Identify the goal of the organisation in its broader context.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Explain the agency issue in an organisation with reference to the goal of the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>organisation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Discuss the role of financial institutions and markets in managerial finance.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Discuss the importance of business taxes in financial decision making.</td>
</tr>
<tr>
<td>2</td>
<td>Analyse financial statements</td>
<td>After studying this unit, you should be able to:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Interpret the contents of financial statements.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Define financial ratios and list the users of financial ratios.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Analyse an organisation’s liquidity and activity.</td>
</tr>
<tr>
<td>3</td>
<td>Demonstrate an understanding of the financial planning process</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---------------------------------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>
| After studying this unit, you should be able to: | • Explain the effect of depreciation on an organisation’s cash flow.  
• Discuss the organisation’s statement of cash flows, operating cash flows and free cash flows.  
• Explain the financial planning process.  
• Evaluate the cash budget of an organisation.  
• Evaluate the pro forma financial statements of a business. |

<table>
<thead>
<tr>
<th>4</th>
<th>Demonstrate an understanding of the time value of money fundamentals</th>
</tr>
</thead>
</table>
| After studying this unit, you should be able to calculate: | • The future value of a single amount.  
• The future value of an annuity.  
• The present value of a single amount.  
• The present value of a mixed stream of cash flows.  
• The present value of an annuity.  
• The deposits required to accumulate a future sum.  
• The installments required to amortise a loan.  
• Growth rates.  
• Effective interest rates. |
| 5 | Demonstrate an understanding of the valuation of an organisation using cash flows | After studying this unit, you should be able to:  
- Differentiate between debt and equity capital.  
- Discuss the general features of bonds.  
- Value bonds using the basic valuation model.  
- Differentiate between ordinary and preference shares.  
- Describe the issuing process of ordinary shares.  
- Value ordinary equity using the dividend discount model.  
- Apply the free cash flow model to value the organisation and the ordinary equity of an organisation.  
- Apply price multiples such as price-earnings ratio to value ordinary shares. |
| 6 | Demonstrate an understanding of the nature of short-term financial decisions | After studying this unit, you should be able to:  
- Understand working capital management, net working capital, and the related trade-off between profitability and risk.  
- Explain the cash conversion cycle.  
- Discuss inventory management.  
- Explain the credit selection process.  
- Explain trade receivables management.  
- Explain the management of receipts and disbursements.  
- Explain the role of spontaneous liabilities in an organisation. |
### Differentiate between the different sources of unsecured short-term loans.

### Differentiate between the different sources of secured short-term loans.

## 10. Critical cross-field outcomes

The critical cross-field outcomes identified by SAQA for the NQF are essential for development in learners within the education and training system, regardless of the specific area of content of learning. It is these outcomes that are deemed critical for the development of the capacity of life-long learning.

These outcomes are intended to direct the thinking of policy makers, curriculum designers, facilitators of learning, as well as the learners themselves. The critical cross-field outcomes adopted by SAQA are as follows:

1. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
2. Work effectively with others as a member of a team, group, organisation, and community.
3. Organise and manage oneself and one’s activities responsibly and effectively.
4. Collect, analyse, organise and critically evaluate information.
5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation.
6. Use science and technology effectively and critically, showing responsibility towards the environment and health of others.
7. Demonstrate an understanding of the world as a set of related systems by realising that problem solving contexts do not exist in isolation.
8. Reflecting on and exploring a variety of strategies to learn more effectively.
9. Participating as responsible citizens in the life of local, national and global communities.
(10) Being culturally and aesthetically sensitive across a range of social contexts.
(11) Exploring education and career opportunities.
(12) Developing entrepreneurial opportunities.

The transferable skills identified in this course are as follows:

<table>
<thead>
<tr>
<th>Skill</th>
<th>Taught</th>
<th>Practised</th>
<th>Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem solving</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Working in teams</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information gathering/research skills</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Communication skills</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Analytical skills</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Learning strategies</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Responsible citizenship</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural sensitivity</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Career development</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Assessment details

There are two assessments involved in terms of the Financial Management 2 module:
• Assignment: The assignment contributes 20% to the overall mark for the module. Assignments will focus on selected chapters, and need to be typed. Please ensure that you adhere to the general rules of the IMM Graduate School of Marketing pertaining to the style and format of assignments. You will be issued with a separate brief in this regard.

• Examination: The exam incorporates all content covered in the workbook and constitutes 80% of the final mark for the Financial Management 2 module. The duration of the examination is three hours and the paper will count 100 marks. The examination paper will consist of questions in line with the learning outcomes and will include both paragraph type answers and calculations as well as multiple choice questions. Examination results are usually released within six weeks of sitting the examination.

The final mark, consisting of an assignment mark and an examination mark, is released in the form of a final percentage (mark out of 100). The grading system is as follows:

<table>
<thead>
<tr>
<th>Percentage Scale</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>75% or more</td>
<td>Pass with Distinction</td>
</tr>
<tr>
<td>50% - 74%</td>
<td>Pass</td>
</tr>
<tr>
<td>0% - 49%</td>
<td>Fail</td>
</tr>
</tbody>
</table>

A timetable of the assessment programme for the semester, including dates for the assignment to be submitted during the course of the year, is available in the Calendar of Events for that year. Please refer to the current issue of the IMM GSM Prospectus. This document and the Student Yearbook provide details of the IMM GSM assessment policy.
12. **Timeline**

With distance education, it is very important that you track your progress against the timeline. The following timeline can be used as a starting point to set up your personal timeline.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic/study theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Explain the role of financial management in an organisation.</td>
</tr>
<tr>
<td>2</td>
<td>Discuss theoretical concepts underlying financial reporting. Conduct brief performance analyses of the income statement and balance sheet.</td>
</tr>
<tr>
<td>3</td>
<td>Conduct brief performance analyses of the income statement and balance sheet (continuation).</td>
</tr>
<tr>
<td>4</td>
<td>Review the cash flow statement and financial planning process of an organisation.</td>
</tr>
<tr>
<td>5</td>
<td>Prepare pro forma financial statements.</td>
</tr>
<tr>
<td>6</td>
<td>Perform time value of money calculations using financial tables as well as financial calculators.</td>
</tr>
<tr>
<td>7</td>
<td>Perform time value of money calculations using financial tables as well as financial calculators (continuation).</td>
</tr>
<tr>
<td>8</td>
<td>Apply the TVM principles to the valuation of debt of an organisation.</td>
</tr>
<tr>
<td>9</td>
<td>Apply the TVM principles to the valuation of equity.</td>
</tr>
<tr>
<td>10</td>
<td>Apply the TVM principles to the valuation of equity (continuation).</td>
</tr>
<tr>
<td>11</td>
<td>Evaluate the working capital policies of an organisation.</td>
</tr>
<tr>
<td>12</td>
<td>Evaluate the working capital policies of an organisation (continuation).</td>
</tr>
<tr>
<td>13</td>
<td>Revision.</td>
</tr>
</tbody>
</table>
The effectiveness of marketing operations is measured through the application of various financial analysis activities. None of these activities can be performed if you do not have a basic understanding of accounting and finance fundamentals.

Most of these financial analyses fall into one of four financial activities as explained below:

- **Financial situation analysis** determines how well marketing activities are doing. It involves the study of trends, comparative analyses, and assessment of present financial strengths and limitations of the product, brand or business unit. Financial information is used to *evaluate alternatives* such as whether to introduce new products, move into new markets, eliminate a product, expand the sales force or change the distribution channel.

- **Financial planning** involves the projection of sales, cost forecasts and budgets, once it has been decided to implement a specific marketing action.

- **Financial control** is about comparing actual results to planned results, with the objective of keeping an unfavourable results gap as narrow as possible.
Study Unit 1: The role and environment of financial management

This study unit discusses the task of financial management, the goal of the organisation, the role of financial institutions and markets as well as the effect of business taxes on the operations of a business. From a marketing perspective you will need to understand how the activities you pursue will be affected by managerial finance.

Specific learning outcomes

After studying this unit, you should be able to:

- Define financial management in your own words.
- Describe the managerial finance function and its relationship to economics and accounting.
- Identify the primary activities of the financial manager.
- Identify the goal of the organisation in its broader context.
- Explain the agency issue in an organisation with reference to the goal of the organisation.
- Discuss the role of financial institutions and markets in managerial finance.
- Discuss the importance of business taxes in financial decision making.
1. Introduction

We have evaluated at least five South African financial management textbooks for this module and eventually decided on Gitman (2010). The main reason may be the fact that it is written for students involved in distance learning. A further advantage is that every chapter is equipped with extra learning material to assist you as a learner.

A general rule for every chapter we are studying in Gitman (2010) is to start with the section dealing with: **Why this chapter matters to you.** The second reading will be the **chapter vignette** which will be Wiesenhof in the case of Chapter 1. The suggested reading format will give you a broader perspective on the subject matter of the chapter as well as the text in general. **Thirdly** study the contents as specified in the learner guide, keeping the learning outcomes in mind. **Fourthly** you will be required to work through as many examples and problems as possible. Unfortunately courses in finance require paper and pencil work. **If you are not prepared to work through the examples and problems, you will find the subject boring and difficult.**

Businesses exist because they satisfy a human need by providing a product or service. Owners make personal and financial sacrifices when starting up businesses and to ensure success they have to devote a lot of time and energy to the management of the business.

Business cannot be established without sufficient funding and owners put their own money into the business to partially fund it. These personal contributions are known as **owners’ equity.** In addition funds must be **borrowed** and over time be repaid in the form of regular payments (installments) comprising **capital** and **interest.**

Should the business be unable to pay these installments, it may be declared insolvent and its assets may then be repossessed and sold (liquidated) by the
creditors in order to recover as much as possible of the outstanding loan amount.

When investing in a business, owners run the risk of losing money and in addition also incur an opportunity cost as they could have earned interest on the amount invested in the business. The owners should therefore receive compensation for the opportunity cost and the risk they are taking.

2. Finance and business

Study Gitman (2010, Chapter 1: Finance and business).

What is finance?
Finance can be defined as the science and art of managing money.
At the personal level, finance is concerned with individuals’ decisions about how much of their earnings they spend, how much they save, and how they invest their savings.
In a business context, finance involves the same types of decisions: how organisations raise money from investors, how organisations invest money in an attempt to earn a profit, and how they decide whether to reinvest profits in the business or distribute them back to investors.
Note: We have already covered the legal forms of business organisations in FM101 and it is not necessary to study it again.

3. The task of financial management

Study Gitman (2010, Chapter 1: The managerial finance function).

In this section we have a closer look at the role of the financial manager in a business. The emphasis is on the activities of the financial manager with special reference to the relationship with economics and accounting. Take
special note of the role of cash flows in managerial finance. We will return to the concept of cash flows in other units of this guide. After reading the relevant section in the textbook you should be aware why managerial finance is more than accounting.

For the sake of clarity the primary activities of the financial manager are listed here:

**Investment decision**

One of the most important finance tasks is to intelligently allocate capital to long-term assets. This activity is also known as capital budgeting. It is important to allocate capital in those long-term assets so as to get maximum yield in future. Following are the two aspects of an investment decision:

a. Evaluation of new investment in terms of profitability.
b. Comparison of cut-off rate against new investment and prevailing investment.

Since the future is uncertain, there are difficulties in calculation of expected return. Along with uncertainty comes the risk factor which has to be taken into consideration. This risk factor plays a very significant role in calculating the expected return of the prospective investment. Therefore while considering investment proposal it is important to take into consideration both expected return and the risk involved.

Investment decisions not only involve allocating capital to long-term assets but also involve decisions of using funds which are obtained by selling those assets which become less profitable and less productive. It is a wise decision to decompose depreciated assets which are not adding value and utilise those funds in securing other beneficial assets. An opportunity cost of capital needs to be calculated while dissolving such assets. The correct cut-off rate is calculated by using this opportunity cost of the required rate of return (RRR).


**Financing decisions**

Financing decisions is yet another important task which a financial manger must perform. It is important to make wise decisions about when, where and how should a business acquire funds. Funds can be acquired through many ways and channels. Broadly speaking a correct ratio of equity and debt has to be maintained. This mix of equity capital and debt is known as an organisation’s capital structure. An organisation tends to benefit most when the market value of a company’s share maximises. This not only is a sign of growth for the organisation but also maximises shareholders' wealth. On the other hand the use of debt affects the risk and return of a shareholder. It is more risky though it may increase the return on equity funds. A sound financial structure is said to be one which aims at maximising shareholders’ return with minimum risk. In such a scenario the market value of the organisation will maximise and hence an optimum capital structure would be achieved. Other than equity and debt there are several other tools which are used in deciding an organisation’s capital structure.

**Dividend decisions**

Earning profit or a positive return is a common aim of all businesses. But the key function a financial manager performs in case of profitability is to decide whether to distribute all the profits to the shareholder, or retain all the profits, or distribute part of the profits to the shareholder and retain the other half in the business. It’s the financial manager’s responsibility to decide an optimum dividend policy which maximises the market value of the organisation. Hence an optimum dividend payout ratio is calculated. It is a common practice to pay regular dividends in case of profitability. Another way is to issue bonus shares to existing shareholders.

**Liquidity decisions**

It is very important to maintain a liquidity position of an organisation to avoid insolvency. An organisation’s profitability, liquidity and risk are all associated with the investment in current assets. In order to maintain a trade-off between
profitability and liquidity it is important to invest sufficient funds in current assets. Since current assets do not earn anything for a business, a proper calculation must be done before investing in current assets. Current assets should be valued properly and disposed of from time to time once they become non-profitable. Currents assets must be used in times of liquidity problems and times of insolvency.

Managerial finance function: Relationship to economics

The field of finance is closely related to economics. Financial managers must understand the economic framework and be alert to the consequences of varying levels of economic activity and changes in economic policy. They must also be able to use economic theories as guidelines for efficient business operation.

Marginal cost-benefit analysis is the economic principle that states that financial decisions should be made and actions taken only when the added benefits exceed the added costs. Marginal cost-benefit analysis can be illustrated using the following simple example.

Nord Department Stores is applying marginal-cost benefit analysis to decide whether to replace a computer:

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits with new computer</td>
<td>R 10,000.00</td>
</tr>
<tr>
<td>Less: benefits with old computer</td>
<td>-R 3,000.00</td>
</tr>
<tr>
<td>(1) Marginal (added) benefits</td>
<td>R 7,000.00</td>
</tr>
<tr>
<td>Cost of new computer</td>
<td>R 8,000.00</td>
</tr>
<tr>
<td>Less: Proceeds from sale of old computer</td>
<td>-R 2,000.00</td>
</tr>
<tr>
<td>(2) Marginal (added) benefits</td>
<td>R 60,000.00</td>
</tr>
<tr>
<td>Net benefit [(1) - (2)]</td>
<td>R 1,000.00</td>
</tr>
</tbody>
</table>
Managerial finance function: Relationship to accounting

The organisation's finance and accounting activities are closely-related and generally overlap.

In small organisations accountants often carry out the finance function, and in large organisations financial analysts often help compile accounting information.

One major difference in perspective and emphasis between finance and accounting is that accountants generally use the accrual method while in finance the focus is on cash flows.

Whether an organisation earns a profit or experiences a loss, *it must have a sufficient flow of cash to meet its obligations as they come due.*

The significance of this difference can be illustrated using the following simple example.

The Nassau Corporation experienced the following activity last year:

Sales R100 000 (1 yacht sold, 100% still uncollected)
Costs R80 000 (all paid in full under supplier terms)

Now contrast the differences in performance under the accounting method (accrual basis) versus the financial view (cash basis):

<table>
<thead>
<tr>
<th>Income Statement Summary</th>
<th>Accrual basis</th>
<th>Cash basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>R100 000</td>
<td>R 0</td>
</tr>
<tr>
<td>Less: Costs</td>
<td>(80,000)</td>
<td>(80,000)</td>
</tr>
<tr>
<td>Net profit/(loss)</td>
<td>R20 000</td>
<td>R(80 000)</td>
</tr>
</tbody>
</table>

Finance and accounting also differ with respect to decision making:
Accountants devote most of their attention to the *collection and presentation of financial data*.

Financial managers evaluate the accounting statements, develop additional data, and *make decisions* on the basis of their assessment of the associated returns and risks.

**Please do not ignore the review questions in your textbook.**

To assist you we supply the suggested answers to review questions 1.7 to 1.10.
1.7. The financial manager within the mature organisation must make decisions with respect to handling financial planning, acquisition of non-current assets, obtaining funds to finance non-current assets, managing working capital needs, managing the pension fund, managing foreign exchange and distribution of corporate earnings to owners.

1.8. Finance is often considered a form of applied economics. Organisations operate within the economy and must be aware of economic principles, changes in economic activity, as well as economic policy. Principles developed in economic theory are applied to specific areas in finance. From macroeconomics comes the institutional structure in which money and credit flows take place. From micro-economics, finance draws the primary principle used in financial management – marginal analysis. Since this analysis of marginal benefits and costs is a critical component of most financial decisions, the financial manager needs basic economic knowledge.

1.9. Accountants operate on an accrual basis, recognising revenues at the point of sale and expenses when incurred. The financial manager focuses on the actual inflows and outflows of cash, recognising revenues when actually received and expenses when actually paid.

The accountant primarily gathers and presents financial data; the financial manager devotes attention primarily to decision making through analysis of financial data.

1.10. The two key activities of the financial manager as related to the organisation’s statement of financial position are:

a. Making investment decisions: Determining both the most efficient level and the best mix of assets; and

b. Making financing decisions: Establishing and maintaining the proper mix of short- and long-term financing and raising needed financing in the most economical fashion.
Investment decisions concern the top part of the statement of financial position (current and non-current assets). Financing decisions deal with the bottom part of the statement of financial position (current liabilities, long-term debt and shareholders’ equity).

The above serves as an example of the kind of responses expected from you when attempting review questions. Remember review questions also serve as possible exam questions.

4. The goal of the organisation

Study Gitman (2010, Chapter 1: Goal of the organisation).

In this section you are required to focus on the following topics:

- Profit maximisation
- Maximisation of owners’ wealth
- The agency issue.

Although different views exist on profit medication the profit motive is still regarded as the basic goal of businesses in a market orientated system. Profit in this sense can be regarded as sales income less total costs.

If we accept that the objective of managerial finance is to maximise the value of the organisation for its stakeholders, then we need to determine how we can achieve this. Firstly management needs to make investments that offer a return that exceeds the cost of capital, that is the cost of financing. Secondly, the cost of capital will take into account the underlying risk of the organisation’s investments. Thirdly, the value of the organisation will be increased by the organisation being able to reduce the cost of capital.
The question remains: “What determines an organisation’s value?” In a nutshell, it is an organisation’s ability to generate cash flows now and in the future.

Graphically the determinants of an organisation’s value can be depicted as shown in the figure below:

**Figure 1: Determinants of an organisation’s value**

According to the information in Figure 1 an organisation generates sales, pays its costs and taxes and makes the necessary investments in assets to support the growth. The result is free cash flows (we will come back to a definition), which is available for distribution to all investors. The organisation’s capital structure (use of equity and borrowed capital) and the risk of its operations determine the total risk of the free cash flows to the investors. The risk is combined with the level of interest rates in the economy and investors’ overall attitude toward risk. This results in the rate of return that investors require, which is the weighted average cost of capital in the organisation. The stream of annual expected future free cash flows, combined with the cost of capital, determines the value of the organisation.
The separation of management and ownership means that managers of many large companies own a very small proportion of the shares of the company. This means that shareholders (the owners of the organisation) and the management of the organisation have an agency relationship. Now study the textbook for more background on this interesting relationship.

5. Financial institutions and markets

Study Gitman (2010, Chapter 1: Financial institutions and markets).

Growing organisations need access to financial markets, and as indicated in Figure 1 financial markets have a significant impact on an organisation’s cost of capital. This section deals with financial markets. You will have to consult your learner guide for economics to refresh your knowledge on the effect of interest rates on the economy in general and more specifically organisations in particular. We will return to interest rate fundamentals when we deal with valuation of future cash flows.

Businesses often need capital to implement growth plans; governments require funds to finance building projects, and individuals frequently want loans to purchase cars, homes and education. Where can they get this money? Fortunately, there are other individuals and organisations with incomes greater than their expenditure. Financial markets bring together people and organisations needing money with those having surplus funds. Financial institutions serve as intermediaries between borrowers and lenders.

Financial managers should be fully aware of the operation of financial institutions and markets.
6. Business taxes

*Study Gitman (2010, Chapter 1: Business taxes).*

All organisations and individuals are subjected to the payment of all kinds of taxes. Brief attention is paid to two kinds of taxes payable by organisations, namely income tax on ordinary income and capital gains tax.

**Summary**
Finance is the science and art of managing money. Managerial finance is concerned with the duties of the financial manager working in a business. The goal of the organisation is maximise its value, and therefore the wealth of its shareholders. Maximising the value of the organisation means running the business in the interest of those who own it – the shareholders.

The financial manager must understand the economic environment and rely heavily on the economic principle of marginal cost-benefit analysis to make financial decisions. Financial managers use accounting but concentrate on cash flows and decision making.

The primary activities of the financial manager, in addition to ongoing involvement in financial analysis and planning, are making investment decisions and making financing decisions.

Financial institutions bring net suppliers of funds and net demanders together to help translate the savings of individuals, businesses, and governments into loans and other types of investments.

Financial institutions collect the savings of individuals and channel those funds to borrowers such as businesses and governments. Financial markets provide a forum in which savers and borrowers can transact business directly.
In the money market, savers who want a temporary place to deposit funds where they can earn interest interact with borrowers who have a short-term need for funds. In contrast, the capital market is the forum in which savers and borrowers interact on a long-term basis.

Corporate income is subject to corporate taxes. Corporate tax rates apply to both ordinary income (after deduction of allowable expenses) and capital gains. Corporate taxpayers can reduce their taxes through certain provisions in the tax Act. A capital gain occurs when an asset is sold for more than its initial purchase price; profit is added to ordinary corporate income and taxed at regular corporate tax rates.

Self-assessment exercise

Attempt the following exercise and problems at the end of Chapter 1 in Gitman (2010): Exercise E1-4 and problems P1-2, P1-3, P1-5 and P1-7.
Study Unit 2: Analysis of financial statements

The serious student in marketing needs to understand the effects of marketing decisions on the financial statements of the organisation, particularly the statement of comprehensive income and the statement of cash flows and how analysis of ratios, especially those involving sales figures will affect the organisation’s decisions about levels of inventory, credit policies and pricing decisions.

Specific learning outcomes

After studying this unit, you should be able to:

- Interpret the contents of the financial statements.
- Define financial ratios and list the users of financial ratios.
- Analyse an organisation’s liquidity and activity.
- Analyse an organisation’s solvency.
- Analyse an organisation’s profitability.
- Use market ratios to analyse the market value of an organisation.

1. Introduction

In Financial Management 1 (FM101) you were exposed to contents and preparation of financial statements. In FM202 the emphasis is on the use of the information in the financial statements to analyse the strengths and weaknesses of an organisation as far as the financial information is in a position to assist in this investigation.
You will note that Chapter 2 is divided into two sections: the first section deals with the shareholder’s report while the second part deals with the analysis of the statements. It is trusted that you will acquaint yourself, as a matter of revision, with the contents of the financial statements.

2. **Annual financial statements**

*Study Gitman (2010, Chapter 2: The shareholder’s report).*

When studying, take note of the four key financial statements, namely the:

- **Statement of comprehensive income (formerly income statement):**
  The *income statement* provides a financial summary of a company’s operating results during a specified period. Although they are prepared quarterly for reporting purposes, they are generally computed monthly by management.

- **Statement of financial position (formerly balance sheet):**
  The *balance sheet* presents a summary of an organisation’s financial position at a given point in time. The statement balances the organisation’s assets (what it owns) against its financing, which can be either debt (what it owes) or equity (what was provided by owners).

- **Statement of changes in equity:**
  This reconciles the net income earned during a given year, and any cash dividends paid, with the change in retained earnings between the start and the end of that year.

- **Statement of cash flows:**
  The *statement of cash flows* provides a summary of the organisation’s operating, investment, and financing cash flows and reconciles them with changes in its cash and marketable securities during the period. This
statement not only provides insight into a company’s investment, financing and operating activities, but also ties together the income statement and previous and current balance sheets.

The notes to the statements are regarded as an integral part of the financial statements.

We will not require you to prepare the statements, but we will expect you to identify items belonging to the individual statements. If you see an item, cash on hand, you must recognise it as a current asset belonging in the statement of financial position. A delivery van belonging to a supermarket is a non-current asset and belongs in the statement of financial position. **You will be required, if given a list of financial items, to clearly identify the nature of each item.**

To test your general understanding of the section, here are suggested solutions to the review questions:

1. The role of the Accounting Practices Board (APB) in the financial reporting of businesses is highly significant. The general accepted accounting standards that organisations must comply with and the procedures in monitoring those standards are referred to as generally accepted accounting procedures (GAAP) and are established primarily by the APB. Both the process of monitoring the accountants and the use of GAAP in financial reporting are necessary to restore and maintain public confidence in the financial information distributed to the public.

2. The purposes of the four major financial statements are:

   *Statement of comprehensive income* – the purpose of the statement of comprehensive income is to provide a financial summary of the organisation’s operating results during a specified time period. It includes both the sales for the organisation and the costs incurred in generating those sales. Other expenses, such as taxes, are also included on this statement.
Statement of financial position – the purpose of the statement of financial position is to present a summary of the assets owned by the organisation, the liabilities owed by the organisation, and the net financial position of the owners as of a given point in time. The assets are often referred to as investments and the liabilities and owners’ equity as financing.

Statement of changes in equity – this statement reconciles the net income earned during the year, and any cash dividends paid, with the change in retained earnings during the year.

Statement of cash flows – this statement provides a summary of the cash inflows and the cash outflows experienced by the organisation during the period of concern. The inflows and outflows are grouped into the cash flow areas of operations, investment, and financing.

3. The notes to the financial statements are important because they provide detailed information not directly available in the financial statements. The footnotes provide information on accounting policies, procedures, calculation, and transactions underlying entries in the financial statements.

©Self-assessment exercise

Attempt the following problems at the end of Chapter 2 in Gitman (2010): Problems P2-2 and P2-8.

3. Using financial ratios

The purpose of this section is to identify the parties normally interested in financial ratios. A breakdown is also given of the kinds of ratio comparisons. Also take note of the limitations of ratio analysis.

In what follows, the emphasis will fall on the calculation and interpretation of various ratios. For the sake of interpretation, ratios are classified into the following groups of ratios:

- Liquidity ratios
- Activity ratios
- Debt or solvency ratios
- Profitability ratios
- Market ratios.

**Ratio analysis** involves methods of calculating and interpreting financial ratios to analyse and monitor the organisation’s performance. **Current and prospective shareholders** are interested in the organisation’s current and future level of risk and return, which directly affect share price. **Creditors** are interested in the short-term liquidity of the organisation and its ability to make interest and principal payments. **Management** is concerned with all aspects of the organisation’s financial situation, and it attempts to produce financial ratios that will be considered favourable by both owners and creditors.

**Types of ratio comparisons**

- **Cross-sectional analysis** is the comparison of different organisations’ financial ratios at the same point in time; involves comparing the organisation’s ratios to those of other organisations in its industry or to industry averages.
- **Benchmarking** is a type of cross-sectional analysis in which the organisation’s ratio values are compared to those of a key competitor or group of competitors that it wishes to emulate.
- Comparison to industry averages is also popular.
• **Time-series analysis** is the evaluation of the organisation’s financial performance over time using financial ratio analysis.

• Comparison of current to past performance, using ratios, enables analysts to assess the organisation’s progress.

• Developing trends can be seen by using multi-year comparisons.

• The most informative approach to ratio analysis combines cross-sectional and time-series analyses.

**Cautions about using ratio analysis**

1. Ratios that reveal large deviations from the norm merely indicate *the possibility* of a problem.

2. A single ratio does not generally provide sufficient information from which to judge the *overall* performance of the organisation.

3. The ratios being compared should be calculated using financial statements dated at the same point in time during the year.

4. It is preferable to use *audited financial statements*.

5. The financial data being compared should have been developed in the same way.

3.1. **Liquidity ratios**

*Study Gitman (2010, Chapter 2: Liquidity ratios).*

Business organisations must take care not to invest all the funds obtained in non-current long-term assets. Since payments take place regularly, organisations must keep so-called liquid assets that can be converted into money easily, so that the necessary payments can be made in time.

The concept of liquidity indicates the ongoing ability of a business to meet its current obligations on time.
A static or dynamic evaluation can be made of the liquidity of a business. In this section we are concerned with a static evaluation, meaning we are looking at what happened in the past. The static evaluation is performed by calculating certain ratios such as the **current ratio** and the **quick ratio**.

When studying the section dealing with liquidity please make sure that you understand the meaning of current assets and current liabilities. Only concentrate on the examples for the Zambezi Company and ignore the personal finance examples and the personal liquidity ratio.

The ratios should be interpreted correctly. In the case of the Zambezi Company the current ratio reads as follows: On 31 December 2009 Zambezi’s had its short-term debts covered by at least 1.97 times or for every rand owed to its short-term creditors. The organisation has R1,97 invested in short-term current assets.

To summarise: The two liquidity ratios are the current ratio and the quick ratio.

Current ratio = Current assets ÷ Current liabilities.
Quick ratio = (Current assets minus inventory (stock) divided by current liabilities.

The importance of inventories:

- From the table below:

<table>
<thead>
<tr>
<th>Company</th>
<th>Current ratio</th>
<th>Quick ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dell</td>
<td>1.3</td>
<td>1.2</td>
</tr>
<tr>
<td>Home Depot</td>
<td>1.3</td>
<td>0.4</td>
</tr>
<tr>
<td>Lowes</td>
<td>1.3</td>
<td>0.2</td>
</tr>
</tbody>
</table>
All three organisations have current ratios of 1.3. However, the quick ratios for Home Depot and Lowes are dramatically lower than their current ratios, but for Dell the two ratios are nearly the same. Why?

Self-assessment exercise


3.2. Activity ratios (asset management ratios)


This group of ratios is designed to measure how effectively management is utilising the organisation’s assets. In particular, the asset management ratios seek to ascertain whether the investment in assets is justified in relation to activity as measured by turnover (sales income).

The activity ratios listed in the text are:

- **Inventory turnover**
  Cost of goods sold/inventory (stock).
  In some instances it will be more correct to use average inventory figures that is (beginning inventory plus ending inventory)/2. **Why?**
  From the inventory turnover ratio it is possible to calculate the average age of the inventory by taking the inventory turnover ratio and dividing that into 365 days. (Textbooks from the USA prefer to use the so called ‘banking year’ and use 360 days per year. Unless otherwise indicated, always use
365 days per year.) Remember the turnover ratio is expressed in times per year while the average age of the inventory is expressed in days.

- **Average collection period**
Trade receivables (debtors)/(annual sales/365) and the ratio is expressed in number of days. The ratio indicates the average number of days it takes to collect monies due from customers who buy on credit.
In some cases it will be necessary to use average trade receivables where average means the (balance at the beginning of the year plus the balance at the end of the year)/2. **Why?**

- **Average payment period**
Calculated as trade and other payables/average purchases per day, and the ratio is expressed in number of days.

- **Total asset turnover**
Calculated as follows: Sales divided by total assets or else average total assets. The ratio is expressed as times per year.

Work through every ratio and make sure that you understand the logic of each ratio. It is also good practice to use average balances in the following instances: inventory, trade receivables, trade payables and total assets. With average we mean the beginning and ending balances of the mentioned items on the statement of financial position. When average figures are required, it will be clearly indicated in questions.
The interpretation of each ratio is also important.

**Sell it fast**
Observe that the grocery business turns over assets faster than any of the other industries listed.
That makes sense because inventory is among the most valuable assets held by these organisations, and grocery stores have to sell baked goods, dairy products, and produce quickly or throw them away when they spoil.
On average, a grocery store has to replace its entire inventory in just a few days or weeks, and that contributes to the rapid turnover of the organisation’s total assets.

**Self-assessment exercise**

Attempt the following problem at the end of Chapter 2 in Gitman (2010): Problem P2-17.

### 3.3 Debt management ratios

*Study Gitman (2010, Chapter 2: Debt ratios).*

Debt management plays a role in financial management and the extent of financial leverage of an organisation has a number of implications. Firstly, the more financial leverage the organisation has the higher the financial risk will be. As debt finance incurs interest, a fixed cost, earnings become more volatile with debt finance. However, additional risk yields additional return and if the organisation earns more on borrowed funds than it pays in interest, the return on owners’ equity is magnified. Finally, by raising funds through debt, the shareholders can obtain finance without losing control of the organisation.

Two debt management ratios are discussed in the text namely:

- **The so-called debt ratio**
  
  Debt ratio = Total liabilities ÷ Total assets

- **The times interest earned ratio.**
  
  Times interest earned ratio = EBIT ÷ taxes

  The figure for earnings before interest and taxes (EBIT) is the same as that for operating profits shown in the income statement.
A third ratio can be added. The debt to equity ratio expressed as follows: total debt/total equity. It differs from the debt ratio in the sense that it measures the ratio of total liabilities to total equity. This ratio indicates the extent that debt is covered by shareholders’ funds.

Self-assessment exercise

Attempt the following problem at the end of Chapter 2 in Gitman (2010): Problem P2-18.

3.4 Profitability ratios


The ratios previously examined have tended to measure management efficiency and risk. As profitability is the result of a large number of policies and decisions, the profitability ratios will show the combined effect of liquidity, asset management and debt management on operating results. Before discussing the individual ratios, Gitman (2010), draws your attention to a tool for evaluating profitability in relation to sales income, namely the common-size statement of comprehensive income.

The following ratios are discussed:

- **Gross profit margin**
  \[
  \text{Gross profit margin} = \frac{Sales - \text{Cost of goods sold}}{Sales} = \frac{\text{Gross profit}}{Sales}
  \]

- **Operating profit margin**
  Operating profit margin = Operating profits ÷ sales

- **Net profit margin**
  Net profit margin = Earnings available for ordinary shareholders ÷ Sales

- **Earnings per share**
Calculated as: (Profit for the year less preference share dividend)/Number of ordinary shares issued where profit for the year means profit after tax.

- **Return on total assets**
  
  Return on total assets (ROA) = Earnings available for ordinary shareholders ÷ Total assets where earnings is interpreted as profit for the year less preference dividend.
  
  Sometimes you will see this ratio expressed as: Net profit before interest and taxes (EBIT)/ total assets.

Where asset turnover tells management the total sales for each rand of assets, return on assets or ROA for short, tells management how much profit an organisation generated for each rand in assets. The return on assets figure is also a good way to gauge the asset intensity of a business. Organisations such as Telkom, Volkswagen, and Transnet are very asset-intensive, meaning they require big, expensive machinery or equipment to generate a profit. Advertising agencies and software companies, on the other hand, are generally very asset-light.

Return on assets measures an organisation’s earnings in relation to all of the resources it had at its disposal (the shareholders’ capital plus short and long-term borrowed funds). Thus, it is the most stringent and excessive test of return to shareholders. If an organisation has no debt, the return on assets and return on equity figures will be the same.

- **Return on equity**
  
  Return on Equity (ROE) = Earnings available for ordinary shareholders ÷ ordinary share equity

Ensure that you are fully acquainted with the composition of the individual ratios as well as the correct interpretation of each ratio.
Self-assessment exercise

Attempt the following problem at the end of Chapter 2 in Gitman (2010):
Problem P2-20.

3.5 Market value ratios


Market value ratios indicate the relationship of the organisation’s share price to dividends and earnings. They are strong indicators of what investors think of the organisation’s past performance and future prospects. If the organisation’s liquidity, asset management, debt management and profitability ratios are all good, investors will value the shares of the organisation highly and the market value ratios will be high.

Two ratios are discussed, namely:

- **Price/earnings ratio**
  Price earnings (P/E) ratio = Market price per ordinary share ÷ Earnings per share.

- **Market/book ratio**
  Calculated as market price per ordinary share/book value per ordinary share.

4. A complete ratio analysis

Study Gitman (2010, Chapter 2: A complete ratio analysis).
**DuPont system of analysis**

- **The DuPont system** of analysis is used to dissect the organisation’s financial statements and to assess its financial condition.
- It merges the income statement and balance sheet into two summary measures of profitability.
- The modified DuPont formula relates the organisation’s ROA to its ROE using the financial leverage multiplier (FLM), which is the ratio of total assets to ordinary equity:
- ROA and ROE as shown in the series of equations below.

- The DuPont system first brings together the *net profit margin*, which measures the organisation’s profitability on sales, with its *total asset turnover*, which indicates how efficiently the organisation has used its assets to generate sales.
  \[ \text{ROA} = \text{Net profit margin} \times \text{Total asset turnover} \]
- Substituting the appropriate formulas into the equation and simplifying results in the formula given earlier:

\[
\text{ROA} = \frac{\text{Earnings available to ordinary shareholders}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total assets}} = \frac{\text{Earnings available to ordinary shareholders}}{\text{Total assets}}
\]

- The modified DuPont Formula relates the organisation’s return on total assets to its return on ordinary equity. The latter is calculated by multiplying the return on total assets (ROA) by the financial leverage multiplier (FLM), which is the ratio of total assets to ordinary equity:
  \[ \text{ROE} = \text{ROA} \times \text{FLM} \]
- Substituting the appropriate formulas into the equation and simplifying results in the formula given earlier:

\[
\text{ROE} = \frac{\text{Earnings available to ordinary shareholders}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Ordinary share capital}} = \frac{\text{Earnings available to ordinary shareholders}}{\text{Ordinary share capital}}
\]
Self-assessment exercise


Summary

Ratio analysis enables shareholders, lenders, and the organisation's managers to evaluate the organisation's financial performance. It can be performed on a cross-sectional or a time-series basis. Benchmarking is a popular type of cross-sectional analysis. Users of ratios should understand the cautions that apply to their use.

Liquidity, or the ability of the organisation to pay its bills as they come due, can be measured by the current ratio and the quick (acid-test) ratio. Activity ratios measure the speed with which accounts are converted into sales or cash inflows or outflows. The activity of inventory can be measured by its turnover, that of accounts receivable by the average collection period and that of accounts payable by the average payment period. Total asset turnover measures the efficiency with which the organisation uses its assets to generate sales.

The more debt an organisation uses, the greater its financial leverage, which magnifies both risk and return. A common measure of indebtedness is the debt ratio. The ability to pay fixed charges can be measured by times interest earned and fixed-payment coverage ratios.

The common-size statement of comprehensive income, which shows all items as a percentage of sales, can be used to determine gross profit margin, operating profit margin, and net profit margin. Other measures of profitability include earnings per share, return on total assets, and return on ordinary equity.
Market ratios include the price/earnings ratio and the market/book ratio.

A summary of all ratios can be used to perform a complete ratio analysis using cross-sectional and time-series analysis. The DuPont system of analysis is a diagnostic tool used to find the key areas responsible for the organisation’s financial performance. It enables the organisation to break the return on common equity into three components: profit on sales, efficiency of asset use, and use of financial leverage.
As a serious marketing student you need to understand the central role that marketing plays in formulating the organisation’s long-term strategic plans, and the importance of the sales forecast as the key input for both cash and profit. The study unit starts with the analysis of the organisation’s cash flow. The concept of free cash flow also receives attention. Thereafter the financial planning process is discussed.

### Specific learning outcomes

After studying this unit, you should be able to:

- Explain the effect of depreciation on an organisation’s cash flow.
- Differentiate between the statement of cash flows, operating cash flows and free cash flows.
- Explain the financial planning process.
- Evaluate the cash budget of an organisation.
- Evaluate the pro forma financial statements of a business.

### 1. Introduction

Financial planning is essential to the strategic growth of a business. As with other kinds of planning, financial planning depends largely on budgets, predictions and targets, and formulates the way in which goals are to be achieved. The financial planning process begins with long-term or strategic financial plans that guide the formulation of short-term operating plans and budgets.
As a marketer you need to understand the central role that marketing plays in formulating the organisation’s long-term, strategic plans, and the importance of the sales forecast as the key input for both cash planning and profit planning.

2. **The organisation’s cash flow**

*Study Gitman (2010, Chapter 3: Analysing the organisation’s cash flow).*

Gitman (2010) is correct when he states that cash is the lifeblood of a business. To really appreciate this statement it is necessary to fully understand the concept of cash flow.

You are required to work through the section dealing with the organisation’s cash flow and pay attention to the following aspects:

- The role of depreciation in the determination of cash flows
- The statement of cash flows
- Difference between operating and free cash flows.

We will not require you to compile a cash flow statement. However, you will be expected to explain the components of the statement. In other words you should be able to distinguish between operating flows, investment flows and financing flows.

To assist you, go over the review questions at the end of a section in the textbook.
To assist you we supply suggested answers to the review questions 3.2 to 3.7.

3.2. *Operating flows* relate to the organisation’s production cycle – from the purchase of raw materials to the finished product. Any expenses incurred directly related to this process are considered operating flows.
Investment flows result from the purchases and sales of non-current assets and business interests.

Financing flows result from borrowing and repayment of debt obligations and from equity transactions such as the sale or purchase of shares and dividend payments.

3.3. A decrease in the cash balance is a source of cash flow because cash flow must have been released for some purpose, such as an increase in inventory. Similarly, an increase in the cash balance is a use of cash flow, since the cash must have been drawn from some source of cash flow. The increase in cash is an investment (use) of cash in an asset.

3.4. Depreciation (and depletion) is a cash inflow to the organisation since it is treated as a non-cash expenditure from the statement of comprehensive income. This reduces the organisation’s cash outflows for tax purposes. Cash flow from operations can be found by adding depreciation and other non-cash charges back to profits after taxes. Since depreciation is deducted for tax purposes but does not actually require any cash outlay, it must be added back in order to get a true picture of operating cash flows.

3.5. Cash flows shown in the statement of cash flows are divided into three categories and presented in the order of: (1) cash flow from operations, (2) cash flow from investments, and (3) cash flow from financing. Traditionally cash outflows are shown in brackets to distinguish them from cash inflows.

3.6. Accounting operating cash flows take net profits after tax and add in depreciation and other non-cash charges. The net profits after tax figure is obtained after interest expense is deducted from operating income. Since interest expense is not an operating account, the financial calculation of operating cash flows excludes the impact of interest by taking EBIT and backing out taxes. This finance definition is a more accurate estimate of cash flows associated with the operations of the organisation.

Both the accounting and finance operating cash flow would be equal if the organisation does not have any debt in its capital structure since interest expense would be zero.
3.7. **Operating cash flow** is the cash flow generated from an organisation’s normal operations of producing and selling its output of goods and services. **Free cash flow** is the amount of cash flow available to both debt and equity investors after the organisation has met its operating and asset investment needs.

**Self-assessment exercise**

Attempt the following problems at the end of Chapter 3 in Gitman (2010): P3-5 and P3-6.

3. **The financial planning process**

Study Gitman (2010, Chapter 3: The financial planning process).

Gitman (2010) discusses the following aspects of the financial planning process: long-term versus short-term financial plans, cash planning, and pro-forma financial statements. Gitman (2010) is brief on the planning process and we therefore insert additional notes as pre-reading to Gitman (2010).

Financial planning depends largely on budgets, predictions and targets. The financial planning process begins with the long-term planning process which is used to guide the formulation of short-term or operating plans and budgets.

Key inputs to the financial planning process are operating budgets, the cash budget and projected financial statements.

Short-term financial planning begins with the sales budget, which informs the production plans that should be developed, taking into account lead times and providing estimates of types and quantities of raw materials required. From this information, direct labour requirements, factory overheads and operating expenses are budgeted. With this information in hand, the business’s projected income statement and cash budget can be prepared.
3.1 Sales forecasts

Sales forecasting is very important as it forms the basis of all budgets. Forecasting what’s going to happen in the future has never been easy. The fact that forecasting is difficult and forecasts are often wrong doesn’t mean we should abandon forecasting altogether. Anyone involved in decision making, and that includes pretty much everybody, needs to base their decisions on what has happened in the past, what’s happening now and what they think will happen in the future.

Our focus here is on sales forecasting, but the basic principles apply to forecasting in general and can be divided into three stages:

- Analyse the past to try and spot trends and patterns in the data.
- Project these trends and patterns into the future (extrapolative forecasting).
- Modify the projected data based on our own experience and judgement (qualitative forecasting).

The forecasting process

**Extrapolative forecasting**

Using time-series analysis it is possible to extract trends from your past sales data, breaking it down into four principal components:
The trend component

Regardless of other fluctuations, there is generally an overall sales trend. Over a period of time, sales may be increasing, decreasing or remain static. Typically, changes in sales growth rates are caused by new technologies, population dynamics, and changes in tastes, changes in the organisation’s marketing strategies or more or less competition in the market-place.

The cyclical component

Sales are often affected by swings in general economic activity as consumers have more or less disposable income available. These fluctuations normally follow a wave-like pattern, being at a crest when the economy is booming and a trough in times of recession.
The seasonal component

During the year, whether it’s on an hourly, weekly, monthly or quarterly basis, there is normally a distinguished pattern to sales. The seasonal component is generally affected by such things as the weather, holidays, local customs and general consumer behaviour.

Erratic events

Having extracted the three components above, what’s left over is data that cannot be accurately predicted, such as strikes, floods, fads, riots, fires, etc. These events are generally random in nature and are difficult to forecast using statistical methods. However, they can, and should be considered using the qualitative forecasting methods described as follows.

Qualitative forecasting

Your forecasts shouldn’t rely on statistical methods alone. While they can give you useful insight into what might happen in the future, there are no guarantees that past trends will continue. New technologies, markets, products, competitors and changes in marketing strategies or in the economic or political environment can all affect future sales. Furthermore, new business will inevitably have insufficient historical data for extrapolative forecasting to be effective. There are various qualitative forecasting techniques that, when combined with extrapolative forecasting, can improve the accuracy of your sales forecasts. They include:
**Visionary forecasting**

This method uses personal insight, judgement and when possible, facts about future events. It is characterised by subjective guesswork and imagination. If used alone, this method is generally inaccurate, but if used to adjust forecasts based on statistical methods, it can be relatively effective.

**Panel consensus**

This technique is based on the assumption that several minds are better than one. Groups of people who can give sensible estimates of sales, such as sales representatives and brand managers, discuss sales expectations and arrive at some consensus on which to base the forecast.

When using panel consensus forecasting, you should bear in mind that social pressure, peer pressure and emotional attitudes displayed in small group behaviour can affect the results of the forecast. Furthermore, research suggests that groups are less risk-averse than their component members.

**The delphi technique**

This approach to forecasting was developed by Olaf Helmer and others at the RAND Corporation in the 1960s. It is similar to panel consensus, but rather than meeting together to debate future sales, the experts are kept apart so their judgement isn't influenced by social pressure and the negative aspects of small group behaviour.

The process is reiterative; relying on questionnaires to collect the opinions of the experts, while statistical summaries of each series of questionnaires provide controlled feedback about the opinions of the other panel members. The statistical summaries enable the experts to re-evaluate their opinions in the light of the general consensus, thus gradually narrowing the range of estimates until an acceptable consensus is reached.
**Historical analogy**

Similar products and markets often display similar growth patterns or life cycles on which you can base your forecast. The S-shaped product life cycle is a typical example. It is generally divided into four stages:

- **Introduction** – a period of slow growth while the product is introduced into the market.
- **Growth** – sales rapidly increase at an increasing growth rate as the market accepts the product.
- **Maturity** – sales increase slowly but with a decreasing growth rate. The product has now been accepted by the majority of the people that are likely to buy it.
- **Decline** – a decline in sales caused by changes in tastes, increased competition or a shift away from your product towards a new or improved product.

![A typical product life cycle](image)

This section on forecasting has been excerpted from information published by Markitsoft Limited, an organisation selling marketing software.

### 3.2 Preparing a financial plan

#### 3.2.1 Projected income statement and balance sheet

*Study Gitman (2010, Chapter 3: Profit planning: Pro forma statements).*
There are four steps required to develop a projected income statement, namely:

1. Make a sales projection.
2. Determine a production schedule with the associated use of material, labour and overhead to arrive at a gross profit.
3. Compute other expenses.
4. Determine the profit.

3.2.2 Projected cash budgets

Study Gitman (2010, Chapter 3: Cash planning: cash budgets).

The generation of sales and profits does not necessarily lead to adequate cash on hand to meet financial obligations as they become due. One reason for this is that sales on credit (accounts receivable) lead to a delay in cash receipts. For this reason it is necessary to set up a projected cash budget. Annual income statements must be divided into smaller more precise time frames to indicate monthly patterns of cash inflows and outflows. Irregular patterns may occur as a result of seasonality in sales, tax or capital expenditures.

The projected balance sheet is drawn up to measure the projected impact of the projected sales and operations on the shareholders’ (owners’) wealth. The projected balance sheet can therefore be used in conjunction with the other financial statements to analyse projected liquidity, profitability, efficiency and solvency of the business.

Summary

Cash flow, the life blood of a business, is a key determinant of the value of an organisation. The financial manager must plan and control the organisation’s cash flow. The goal should be to ensure the organisation’s liquidity and solvency and to provide positive cash flow for the owners. Both the magnitude
and the risk of the cash flow generated on behalf of the owners determine the organisation’s value.

To create value for owners, the financial manager uses tools such as cash budgets, and pro forma financial statements as part of the process of generating positive cash flows. Good financial plans should result in large free cash flows. Clearly, the financial manager must deliberately and carefully plan and arrange the organisation’s cash flows to achieve the organisation’s goal of maximising the value of the organisation. In the case of a company it will be to maximise the share prices of the company.

NB: PLEASE REMEMBER TO PAY ATTENTION TO THE REVIEW QUESTIONS AT THE END OF EACH SECTION IN THE TEXTBOOK.

©Self-assessment exercise

You are required to find solutions for the following problems at the end of Chapter 3 in Gitman (2010): P3-11 and P3-19.
One of the most important questions in finance is: what is the value of a cash flow to be received at a later date? The answer depends on the time value of money, the subject of this study unit. From a marketing point of view you need to understand time value of money because funding of new projects and products must be justified financially using time value of money approaches.

Specific learning outcomes

After studying this unit, you should be able to calculate:

- The future value of a single amount.
- The future value of an annuity.
- The present value of a single amount.
- The present value of a mixed stream of cash flows.
- The present value of an annuity.
- The deposits required to accumulate a future sum.
- The installments required to amortise a loan.
- Growth rates.
- Effective interest rates.

1. Introduction

This study unit introduces an important financial concept: the time value of money. The present value and future of a sum, as well as the present and future values of an annuity, are explained. Special applications of the concepts include intra-year compounding, mixed cash flow streams, mixed cash flows with an embedded annuity, perpetuities, deposits to accumulate a future sum, and loan amortisation. Numerous business and personal financial applications are used as examples. The unit drives home the need to understand time value
of money at the professional level because funding for new assets and programs must be justified using these techniques.

2. The role of time value in finance

Study Gitman (2010, Chapter 3: The role of time value in finance).

At this stage you should familiarise yourself with the future and present value concepts. Also pay close attention to the so called computational tools which may be

- financial calculators,
- electronic spreadsheets,
- financial tables.

Your textbook contains a yellow booklet: Using financial calculators for time value of money calculations.

It is important that you understand TVM terminology and you may want to visit the following Web page http://www.tvmcalcs.com/terminology which provides not only an excellent presentation of the terminology, but also provides tutorials.

- Most financial decisions involve costs and benefits that are spread out over time.
- Time value of money allows comparison of cash flows from different periods.
- Question: Your father has offered to give you some money and asks that you choose one of the following two alternatives:
  - R1,000 today, or
  - R1,100 one year from now.
- What do you do?
The answer depends on what rate of interest you could earn on any money you receive today.

For example, if you could deposit the R1,000 today at 12% per year, you would prefer to be paid today.

Alternatively, if you could only earn 5% on deposited funds, you would be better off if you chose the R1,100 in one year.

**Future value versus present value**

Suppose an organisation has an opportunity to spend R15,000 today on some investment that will produce R17,000 spread out over the next five years as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Cash flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>R 3,000</td>
</tr>
<tr>
<td>2</td>
<td>R 5,000</td>
</tr>
<tr>
<td>3</td>
<td>R 4,000</td>
</tr>
<tr>
<td>4</td>
<td>R 3,000</td>
</tr>
<tr>
<td>5</td>
<td>R 2,000</td>
</tr>
</tbody>
</table>

Is this a wise investment?

To make the right investment decision, managers need to compare the cash flows at a single point in time.

At this stage we strongly recommend that you spend some time on the following aspects:

- The timeline
- Computational tools.
An understanding of the timeline concept is vital for an understanding of the time value of money calculations.

The computational tools are: financial calculators, financial tables and electronic spreadsheets.

**Basic patterns of cash flow**

- The cash inflows and outflows of an organisation can be described by its general pattern.

- The three basic patterns include a single amount, an annuity, or a mixed stream:

The concept of a mixed stream is illustrated in the table below.

<table>
<thead>
<tr>
<th>End of year</th>
<th>Mixed cash flow stream</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>800</td>
</tr>
<tr>
<td>3</td>
<td>1200</td>
</tr>
<tr>
<td>4</td>
<td>1200</td>
</tr>
<tr>
<td>5</td>
<td>1400</td>
</tr>
<tr>
<td>6</td>
<td>300</td>
</tr>
</tbody>
</table>

**3. Time value of money calculations**

For the sake of clarity we will make use of examples to illustrate the principles: The use of financial calculators is strongly recommended because it saves time and the use thereof is in line with modern day business practices. The use of tables, however, helps to understand the logic behind the calculations. It is also important to understand the basics of different equations.

**3.1 Future value of a single cash flow**

*Study Gitman (2010, Chapter 4: Single amounts).*
• **Future value** is the value at a given future date of an amount placed on deposit today and earning interest at a specified rate. Found by applying *compound interest* over a specified period of time.

• **Compound interest** is interest that is earned on a given deposit and has become part of the *principal* at the end of a specified period.

**Example**

If Fred Moreno places R100 in a savings account paying 8% interest compounded annually, how much will he have at the end of 1 year?

Future value at end of year 1 = R100 × (1 + 0.08) = R108, that is, the R100 invested plus the R8 interest earned on the R100.

If Fred were to leave this money in the account for another year, how much would he have at the end of the second year?

Future value at end of year 2 = R100 × (1 + 0.08) × (1 + 0.08) = R116.64, that is, the R100 invested plus the R8 interest for the first year plus the interest earned on the R108 available at the end of year 1.

If you understand the fundamental principles underlying the above calculations, you will not experience problems with TVM calculations.

We use the following notation for the various inputs:

- $FV_n$ = future value at the end of period $n$
- $PV$ = initial principal, or present value
- $r$ = annual rate of interest paid. (*Note:* On financial calculators, $I$ is typically used to represent this rate.)
- $n$ = number of periods (typically years) that the money is left on deposit

The general equation for the future value at the end of period $n$ is
\[ FV_n = PV \times (1 + r)^n \]

Jane Farber places R800 in a savings account paying 6% interest compounded annually. She wants to know how much money will be in the account at the end of five years.

This analysis can be depicted on a timeline as follows:

To solve the problem using the financial tables, we make use of the future value interest factors for one rand compounded at 6 percent (Table A-1 in Appendix A in Gitman 2010). Financial tables are available in most finance textbooks.

Solution: R800 \times 1.338 = R1070.40 (Difference due to rounding of decimal places.)

3.2 Present value of a single amount

\[ PV_n = \frac{FV_n}{(1 + i)^n} \]

Study Gitman (2010, Chapter 4: Single amounts).

Present value is the inverse of the future value and can be expressed by the formula:

The present value of a known future amount can be determined by using the PVIF table.
Study the example explaining how to determine the present value of a single known future value using the PVIF table above.

The formula for the calculation of the present value is given below:

$$\text{PV}_n = \text{FV}_n \times PVIF_n$$

Where:
- $\text{PV}_n$ = the present value of the amount after $n$ periods
- $\text{FV}_n$ = is the future value amount after $n$ periods
- $i$ = the annual rate of interest paid
- $n$ = the number of periods of the investment

Example

Determine the present value of a single known future amount of R1,000 that will be paid out after 5 years at an interest rate of 11%.

The PVIF can be found by looking at the line for period = 5 and column where rate = 11%. The line and column intersect at a value 1.6851.

Therefore the $\text{PV} = \text{FV} \times \text{PVIF}$

$$= R1,000 \times 0.5935$$

$$= R593.50$$
Self-assessment exercise

Try your hand at exercise P4-11 in Gitman (2010, Chapter 4) before you look at the possible solution below.

Using a financial calculator where \( N \) = number of periods, \( I \) = discount date and \( N \) = future value. Remember to change the sign when you capture the future value.

P4-11. Present values

A. \( N = 4, I = 12\% \), \( FV = R7,000 \) \( R4,448.63 \)

B. \( N = 20, I = 8\% \), \( FV = R28,000 \) \( R6,007.35 \)

C. \( N = 12, I = 14\% \), \( FV = R10,000 \) \( R2,075.59 \)

D. \( N = 6, I = 11\% \), \( FV = R150,000 \) \( R80,96.13 \)

E. \( N = 8, I = 20\% \), \( FV = R45,000 \) \( R10,465.56 \)

If we use the financial tables at the back of the book, we will make use of Table A-2 i.e. PVIF the answers will be as follows:

A. For 12\% and 4 years it is \( 0.6355 \times R7,000 = R4,448.50 \)

B. For 8\% and 20 years it is \( 0.2145 \times R28,000 = R6,006,00 \)

C. For 14\% and 12 years it is \( 0.2076 \times R10,000 = R2,076,00 \)

D. For 11\% and 6 years it is \( 5,346 \times 150,000 = R80,196.13 \)

E. For 20\% and 8 years it will be \( 2,326 \times R45,000 = R10,467,00 \)

Differences in answers are due to rounding differences.

The problem of rounding differences can be overcome by using a financial calculator to calculate the PVIF, save it in memory and then multiply the FV with the value in the memory. The answer should be the same as the method where the PV is calculated using the keys \( N \), \( I \), \( FV \) and \( PV \).
3.3 Annuities

*Study Gitman (2010, Chapter 4: Annuities).*

An annuity is a series of equal cash flows paid at equal time intervals for a finite number of periods. A lease that calls for payments of R1000 each month for a year would be referred to as a ‘12-period, R1000 annuity’. Note that, strictly speaking, in order for a series of cash flows to be considered an annuity, each cash flow must be identical and the amount of time between each cash flow must be the same in all cases. There are two types of annuities that vary only in the timing of the first cash flow:

- **Regular annuity** – the first payment is made one period in the future (at period 1).
- **Annuity due** – the first payment is made immediately (at period 0).

The formula for the calculation of the future value of an annuity is given below:

\[
FVA_n = A \times FVIFA_n
\]

Where:

- \( FVA_n \) = the future value of the annuity after \( n \) periods
- \( A \) = is the amount invested or received periodically
- \( i \) = the annual rate of interest paid
- \( n \) = the number of periods of the investment

We will be using the tables in this study unit similar to the one below. Or else you can also use the financial functions on your calculator.
Future Value of annuity of R1 per period for n periods

\[ FVIFA = \frac{[(1+k)^n - 1]}{k} \]

<table>
<thead>
<tr>
<th>Period</th>
<th>Rate</th>
<th>1%</th>
<th>3%</th>
<th>5%</th>
<th>7%</th>
<th>9%</th>
<th>10%</th>
<th>11%</th>
<th>12%</th>
<th>13%</th>
<th>14%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2.0100</td>
<td>2.0300</td>
<td>2.0500</td>
<td>2.0700</td>
<td>2.0900</td>
<td>2.1100</td>
<td>2.1300</td>
<td>2.1500</td>
<td>2.1700</td>
<td>2.1900</td>
<td>2.2100</td>
</tr>
</tbody>
</table>

Study the example explaining how to determine the future value of an ordinary annuity using the FVIFA table.

**Example**

Determine the future value of an ordinary annuity of R1,000 deposited at the end of each year for 5 years at an interest rate of 11%.

The FVIFA can be found by looking at the line for period = 5 and column where rate = 11%. The line and column intersect at a value 6.2278.

Therefore the FVA = A x FVIFA

= R1,000 x 6.2278
= R 6,227.80

An annuity *due* is payable at the *beginning* of each period.

Study the example explaining how to determine the future value of an annuity due using the FVIFA table.

**Example**

Determine the future value of an ordinary annuity of R1,000 deposited at the beginning of each year for 5 years at an interest rate of 11%.

In this instance we will use the FVIF table and determine the future value for each investment individually and then sum these amounts.
<table>
<thead>
<tr>
<th>End of year</th>
<th>Amount deposited</th>
<th>Number of years compounded</th>
<th>Future-value interest factors</th>
<th>Future value at end of year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>R 1 000.00</td>
<td>5</td>
<td>1.6851</td>
<td>R 1 685.10</td>
</tr>
<tr>
<td>2</td>
<td>R 1 000.00</td>
<td>4</td>
<td>1.5181</td>
<td>R 1 518.10</td>
</tr>
<tr>
<td>3</td>
<td>R 1 000.00</td>
<td>3</td>
<td>1.3676</td>
<td>R 1 367.60</td>
</tr>
<tr>
<td>4</td>
<td>R 1 000.00</td>
<td>2</td>
<td>1.2321</td>
<td>R 1 232.10</td>
</tr>
<tr>
<td>5</td>
<td>R 1 000.00</td>
<td>1</td>
<td>1.1100</td>
<td>R 1 110.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Total future value after 5 years</strong></td>
</tr>
</tbody>
</table>

Return to your textbook and study the section dealing with annuities. Make sure you can differentiate between ordinary annuities and annuities due.

**Self-assessment exercise**

Find solutions for the following problems in Gitman (2010): P4-18 and P 4-19.

### 3.4 Mixed streams

*Study Gitman (2010, Chapter 4: Mixed streams).*

A mixed stream of cash flows does not reflect any pattern. To determine the present value of a stream of mixed cash flows, calculate the present value of each future amount individually and then sum the total of these values.

Study the example explaining how to determine the present value of a mixed stream using the PVIF table.

**Example**

Determine the present value of a mixed stream of known future amounts given in the PVIF table using an interest rate of 11%.
<table>
<thead>
<tr>
<th>Period</th>
<th>Cash inflows</th>
<th>Present-value interest factors</th>
<th>Present value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>R 1 200.00</td>
<td>0.9009</td>
<td>R 1 081.08</td>
</tr>
<tr>
<td>2</td>
<td>R 1 300.00</td>
<td>0.8116</td>
<td>R 1 055.08</td>
</tr>
<tr>
<td>3</td>
<td>R 1 400.00</td>
<td>0.7312</td>
<td>R 1 023.68</td>
</tr>
<tr>
<td>4</td>
<td>R 1 600.00</td>
<td>0.6587</td>
<td>R 1 053.92</td>
</tr>
<tr>
<td>5</td>
<td>R 1 800.00</td>
<td>0.5935</td>
<td>R 1 068.30</td>
</tr>
<tr>
<td>Total present value</td>
<td></td>
<td>R 5 282.06</td>
<td></td>
</tr>
</tbody>
</table>

3.5 The frequency of compounding

*Study Gitman (2010, Chapter 4: Compounding interest more frequently than annually).*

Interest is often compounded more frequently than once a year for example monthly, weekly, daily, etc. The text in Gitman (2010) discusses various issues and techniques related to these more frequent compounding periods.

Pay attention to the examples in the text as these will help you to master the subject.

**Note:** The section on continuous compounding can be omitted.

**Self-assessment exercise**

Find solutions for the following problem in Gitman (2010): P4-35.

3.6 Other TVM applications

*Study Gitman (2010, Chapter 4: Special applications of time value of money).*
Four special applications of the time value of money are discussed, namely:

- The determination of deposits needed to accumulate a future sum
- Loan amortisation
- The determination of interest or growth rates
- Finding an unknown number of periods.

It is interesting that each application is nothing else than an application of the PV or FV principles and formulae.

You are required to work through the examples in Gitman (2010). In the examples in the text the use of a calculator or financial tables is clearly illustrated.

Self-assessment exercise

Find solutions for the following problems in Gitman (2010): P4-40, P4-49 and P4-50.

Summary

In this study unit you were introduced to the time value of money applications. You have learned to calculate:

- The future value of a single amount
- The future value of an annuity
- The present value of a single amount
- The present value of a mixed stream of cash flows
- The present value of an annuity
• The deposits required to accumulate a future sum
• The installments required to amortise a loan
• Growth rates
• Effective interest rates.
Study Unit 5: Valuation of future cash flows: Bond and equity valuation

The second part dealing with the valuation of future cash flows considers the determinants of the value of a bond and a share. From a marketing point of view you need to realise that an organisation’s ideas for products and services will greatly affect its ability to raise capital and that a perceived increase in risk from new projects may negatively affect the value of the organisation as expressed in its share price.

Specific learning outcomes

After studying this unit, you should be able to:

- Differentiate between debt and equity capital.
- Discuss the general features of bonds.
- Value bonds using the basic valuation model.
- Differentiate between ordinary and preference shares.
- Describe the issuing process of ordinary shares.
- Value ordinary equity using the dividend discount model.
- Apply the free cash flow model to value the organisation and the ordinary equity of an organisation.
- Apply price multiples such as price-earnings ratio to value ordinary shares.

1. Introduction

This study unit continues on the time value of money concepts introduced in the previous study unit. Models for valuing bonds as well as preference and ordinary equity are presented. For ordinary equity, the zero growth, constant growth, and variable growth models are examined. The relationship between share valuation and efficient markets is presented. The role of venture capitalists and investment bankers is also discussed. The free cash flow model is explained and compared with the dividend discount models. Other
approaches to ordinary equity valuation and their shortcomings are explained. The study unit ends with a discussion of the interrelationship between financial decisions, expected return, risk, and an organisation’s value.

Before discussing the valuation of bonds it is necessary that we refresh our memory about interest rates. Some of you will recall the discussion on interest rates in the economics module.

**Interest rate fundamentals**

The *interest rate* is usually applied to debt instruments such as bank loans or bonds; the compensation paid by the borrower of funds to the lender and from the borrower’s point of view, the cost of borrowing funds.

The *required return* is usually applied to equity instruments such as common stock; the cost of funds obtained by selling an ownership interest.

Several factors can influence the equilibrium interest rate:

1. Inflation, which is a rising trend in the prices of most goods and services.
2. Risk, which leads investors to expect a higher return on their investment.
3. Liquidity preference, which refers to the general tendency of investors to prefer short-term securities.

The *real rate of interest* is the rate that creates equilibrium between the supply of savings and the demand for investment funds in a perfect world, without inflation, where suppliers and demanders of funds have no liquidity preferences and there is no risk. The real rate of interest changes with changing economic conditions, tastes, and preferences.

The supply-demand relationship that determines the real rate is shown in the figure below:
The **nominal rate of interest** is the actual rate of interest charged by the supplier of funds and paid by the demander. The nominal rate differs from the real rate of interest, \( r^* \) as a result of two factors:

- Inflationary expectations reflected in an inflation premium (IP)
- Issuer and issue characteristics such as default risks and contractual provisions as reflected in a risk premium (RP).

The nominal rate of interest for security 1, \( r_1 \), is given by the following equation:

\[
r_1 = r^* + IP + RP_1
\]

The nominal rate can be viewed as having two basic components: a risk-free rate of return, \( R_F \), and a risk premium, \( RP_1 \):

For the moment, ignore the risk premium, \( RP_1 \), and focus exclusively on the risk-free rate. The risk-free rate can be represented as:

\[
R_F = r^* + IP
\]

The risk-free rate (as shown in the preceding equation) embodies the real rate of interest plus the expected inflation premium.
The inflation premium is driven by investors’ expectations about inflation – the more inflation they expect, the higher will be the inflation premium and the higher will be the nominal interest rate.

**Term structure of interest rates**

The term structure of interest rates is the relationship between the maturity and rate of return for bonds with similar levels of risk.

A graphic depiction of the term structure of interest rates is called the yield curve.

The yield to maturity is the compound annual rate of return earned on a debt security purchased on a given day and held to maturity.

The figure below illustrates the concept of the term structure of interest rates.

![Treasury Yield Curves](image)

A normal yield curve is an upward-sloping yield curve that indicates that long-term interest rates are generally higher than short-term interest rates.

An inverted yield curve is a downward-sloping yield curve that indicates that short-term interest rates are generally higher than long-term interest rates.

A flat yield curve is a yield curve that indicates that interest rates do not vary much at different maturities.
2. Corporate bonds

2.1 General features and other aspects of bonds

*Study Gitman (2010), Chapter 7: Corporate bonds.*

A **bond** is a long-term debt instrument indicating that a corporation has borrowed a certain amount of money and promises to repay it in the future under clearly defined terms.

The bond’s **coupon interest rate** is the percentage of a bond’s par value that will be paid annually, typically in two equal semi-annual payments, as interest.

The bond’s par value, or face value, is the amount borrowed by the company and the amount owed to the bondholder on the maturity date.

The bond’s maturity date is the time at which a bond becomes due and the principal must be repaid.

**Aspects of corporate bonds**

- The **bond indenture** is a legal document that specifies both the rights of the bondholders and the duties of the issuing corporation.

- **Standard debt provisions** are provisions in a *bond indenture* specifying certain record-keeping and general business practices that the bond issuer must follow; normally, they do not place a burden on a financially sound business.

- **Restrictive covenants** are provisions in a *bond indenture* that place operating and financial constraints on the borrower.

The most common restrictive covenants do the following:
1. Require a minimum level of liquidity, to ensure against loan default.

2. Prohibit the sale of accounts receivable to generate cash. Selling receivables could cause a long-run cash shortage if proceeds were used to meet current obligations.

3. Impose fixed-asset restrictions. The borrower must maintain a specified level of fixed assets to guarantee its ability to repay the bonds.

4. Constrain subsequent borrowing. Additional long-term debt may be prohibited, or additional borrowing may be subordinated to the original loan. **Subordination** means that subsequent creditors agree to wait until all claims of the senior debt are satisfied.

5. Limit the organisation’s annual cash dividend payments to a specified percentage or amount.

- **Subordination** in a bond indenture is the stipulation that subsequent creditors agree to wait until all claims of the *senior debt* are satisfied.

- **Sinking fund requirements** are a restrictive provision often included in a bond indenture, providing for the systematic retirement of bonds prior to their maturity.

- A **trustee** is a paid individual, corporation, or commercial bank trust department that acts as the third party to a bond indenture and can take specified actions on behalf of the bondholders if the terms of the indenture are violated.

**Cost of bonds to the issuer**

- In general, the longer the bond’s maturity, the higher the interest rate (or cost) to the organisation.

- In addition, the larger the size of the offering, the lower will be the cost (in % terms) of the bond.
• Also, the greater the default risk of the issuing organisation, the higher the cost of the issue.

• Finally, the cost of money in the capital market is the basis for determining a bond’s coupon interest rate.

**General features of a bond issue**

• The **conversion feature** of convertible bonds allows bondholders to change each bond into a stated number of shares of common stock.
  
  – Bondholders will exercise this option only when the market price of the stock is greater than the conversion price.

• A **call feature**, which is included in nearly all corporate bond issues, gives the issuer the opportunity to repurchase bonds at a stated *call price* prior to maturity.
  
  – The **call price** is the stated price at which a bond may be repurchased, by use of a call feature, prior to maturity.
  
  – The **call premium** is the amount by which a bond’s *call price* exceeds its par value.

• In general, the **call premium** is equal to one year of coupon interest and compensates the holder for having it called prior to maturity.

• Furthermore, issuers will **exercise** the call feature when interest rates fall and the issuer can refund the issue at a lower cost.

Issuers typically must pay a higher rate to investors for the call feature compared to issues without the feature.

• Bonds are also occasionally issued with **share purchase warrants**, which are instruments that give their holders the right to purchase a certain number of shares of the issuer’s ordinary share capital at a specified price over a certain period of time. Occasionally attached to bonds as ‘sweeteners’. 
• Including warrants typically allows the organisation to raise debt capital at a lower cost than would be possible in their absence.

Bond yields

The three most widely cited yields are:

– Current yield

– Yield to maturity (YTM)

– Yield to call (YTC).

Bond prices

• Because most corporate bonds are purchased and held by institutional investors, such as banks, insurance companies, and mutual funds, rather than individual investors, bond trading and price data are not readily available to individuals.

• Although most corporate bonds are issued with a par, or face value of R1,000, all bonds are quoted as a percentage of par.

  – A R1, 000-par-value bond quoted at 94.007 is priced at R940.07 (94.007% × R1,000). Corporate bonds are quoted in rands and cents.

  Thus, Company C’s price of 103.143 for the day was R1,031.43 – that is, 103.143% × R1,000.

Self-assessment exercise

Find solutions for the following problem in Gitman (2010): P6-11.
2.2 Valuation fundamentals

Study Gitman (2010, Chapter 7: Valuation fundamentals).

- **Valuation** is the process that links risk and return to determine the worth of an asset.

- There are three key inputs to the valuation process:
  1. Cash flows (returns)
  2. Timing
  3. A measure of risk, which determines the required return.

- The value of any asset is the present value of all future cash flows it is expected to provide over the relevant time period.

- The value of any asset at time zero, $V_0$, can be expressed as

$$
V_0 = \frac{CF_1}{(1 + r)^1} + \frac{CF_2}{(1 + r)^2} + \cdots + \frac{CF_n}{(1 + r)^n}
$$

Where

- $V_0$ = Value of the asset at time zero
- $CF_T$ = cash flow expected at the end of year $t$
- $r$ = appropriate required return (discount rate)
- $n$ = relevant time period
2.3 The valuation process of bonds

Study Gitman (2010, Chapter 7: Bond valuation).

Bond fundamentals

- Bonds are long-term debt instruments used by businesses and government to raise large sums of money, typically from a diverse group of lenders.

- Most bonds pay interest semi-annually at a stated coupon interest rate, have an initial maturity of 10 to 30 years, and have a par value of R1,000 that must be repaid at maturity.

Basic bond valuation

The basic model for the value, $B_0$, of a bond is given by the following equation:

$$B_0 = I \times \left[ \sum_{t=1}^{n} \frac{1}{(1 + r_d)^t} \right] + M \times \left[ \frac{1}{(1 + r_d)^n} \right]$$

Where

- $B_0 =$ value of the bond at time zero
- $I =$ annual interest paid in dollars
- $n =$ number of years to maturity
- $M =$ par value in dollars
- $r_d =$ required return on a bond
• Mills Company, a large defence contractor, on January 1, 2007, issued a 10% coupon interest rate, 10-year bond with a R1,000 par values that pay interest semi-annually.

• Investors who buy this bond receive the contractual right to two cash flows: (1) R100 annual interest (10% coupon interest rate × R1,000 par value) distributed as R50 (1/2 × R100) at the end of each 6 months, and (2) the R1,000 par value at the end of the tenth year.

• Assuming that interest on the Mills Company bond issue is paid annually and that the required return is equal to the bond’s coupon interest rate, $I = R100$, $r_d = 10\%$, $M = R1,000$, and $n = 10$ years.

The computations involved in finding the value of the bond are depicted graphically on the following timeline:

![Timeline Diagram](image)

**Calculator inputs**

You can also make use of the key inputs on a financial calculator to find a solution. Note that the calculated bond value is equal to its _par_ value. This will always be the case when the required return is equal to the coupon interest rate.
In practice, the value of a bond in the market-place is rarely equal to its par value.

- Whenever the required return on a bond differs from the bond’s coupon interest rate, the bond’s value will differ from its par value.

- The required return is likely to differ from the coupon interest rate because either (1) economic condition has changed; causing a shift in the basic cost of long-term funds, or (2) the organisation’s risk has changed.

**Required returns and bond values**

Use the information in the table below to illustrate the relationship between required returns and bond values. Have you noticed the inverse relationship? For example: If interest rises to 12% the bond will sell at a discount price to ensure a return of 12%.
Time to maturity and bond values

**Interest rate risk** is the chance that interest rates will change and thereby change the required return and bond value.

- Rising rates, which result in decreasing bond values, are of greatest concern.
- The shorter the amount of time until a bond's maturity, the less responsive is its market value to a given change in the required return.

The relationship between the market value of a bond and the time to maturity is illustrated in the figure below.

<table>
<thead>
<tr>
<th>Required return, $r_d$</th>
<th>Bond value, $B_0$</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>12%</td>
<td>$887.00</td>
<td>Discount</td>
</tr>
<tr>
<td>10</td>
<td>1,000.00</td>
<td>Par value</td>
</tr>
<tr>
<td>8</td>
<td>1,134.20</td>
<td>Premium</td>
</tr>
</tbody>
</table>

**Bond Values for Various Required Returns (Mills Company's 10% Coupon Interest Rate, 10-Year Maturity, $1,000 Par, January 1, 2013, Issue Date, Paying Annual Interest)**
Yield to maturity (YTM)

• The **yield to maturity (YTM)** is the rate of return that investors earn if they buy a bond at a specific price and hold it until maturity. (Assumes that the issuer makes all scheduled interest and principal payments as promised.)

• The yield to maturity on a bond with a current price equal to its par value will always equal the coupon interest rate.

• When the bond value differs from par, the yield to maturity will differ from the coupon interest rate.

Semi-annual interest and bond values

• The procedure used to value bonds paying interest semi-annually is similar to that shown in the TVM unit for compounding interest more frequently than annually, except that here we need to find present value instead of future value. It involves the following:

  1. Converting annual interest, $I$, to semi-annual interest by dividing $I$ by 2.

  2. Converting the number of years to maturity, $n$, to the number of 6-month periods to maturity by multiplying $n$ by 2.

  3. Converting the required stated (rather than effective) annual return for similar-risk bonds that also pay semi-annual interest from an annual rate, $r_d$, to a semi-annual rate by dividing $r_d$ by 2.

\[
B_0 = \frac{I}{2} \times \left[ \sum_{t=1}^{2n} \frac{1}{\left(1 + \frac{r_d}{2}\right)^t} \right] + M \times \left[ \frac{1}{\left(1 + \frac{r_d}{2}\right)^{2n}} \right]
\]

**NB:** You are required to work through the examples in Gitman (2010) to fully understand the principles of bond valuation.
Self-assessment exercise

Find solutions for the following problems in Gitman (2010): P6-18, P6-19 and P 6-25.

3. Perspectives on ordinary and preference share capital

Study Gitman (2010, Chapter 7: Ordinary and preference share capital).

Before attention can be paid to the valuation of ordinary equity, it is necessary to learn more about the fundamental characteristics of equity.

The material in Gitman (2010) is descriptive in nature but is essential for a real understanding of the role of equity in the financial structure of an organisation. To assist you in the mastering of the concepts, we supply you with suggested answers to review questions 7.2 to 7.11.
Review questions answers

7.2 Ordinary shareholders are the true owners of the organisation, since they invest in the organisation only upon the expectation of future returns. They are not guaranteed any return, but merely get what is left over after all the other claims have been satisfied. Since the ordinary shareholders receive only what is left over after all other claims are satisfied, they are placed in a quite uncertain or risky position with respect to returns on invested capital. As a result of this risky position, they expect to be compensated in terms of both dividends and capital gains of sufficient quantity to justify the risk they take.

7.3 Rights offerings protect against dilution of ownership by allowing existing shareholders to purchase additional shares of any new stock issues. Without this protection current shareholders may have their voting power reduced. Rights are financial instruments issued to current shareholders that permit these shareholders to purchase additional shares at a price below the market price, in direct proportion to their number of owned shares.

7.4 Authorised shares are stated in the company’s articles of incorporation that specifies the maximum number of shares the organisation can sell without receiving approval from the shareholders.

• When authorised shares are sold to the public and are in the hands of the public, they are called issued shares.

• When an organisation purchases back its own shares from the public, they are classified as treasury shares. Treasury shares are not considered issued since they are not in the hands of the public.

• Issued shares are the ordinary shares that have been put into circulation.

7.5 Issuing shares outside of their home markets can benefit organisations by broadening the investor base and also allowing them to become better integrated into the local business scene. A local share listing both increases local press coverage and serves as effective corporate advertising. Locally traded shares can also be used to make corporate acquisitions. American
Depository receipts (ADRs) represent ownership of shares of a foreign company’s stock held on deposit by the US bank in the companies’ home country. ADRs are issued in dollars by an American bank to US investors and are subject to US securities laws, yet still give investors the opportunity to internationally diversify their portfolios. American depositary shares (ADSs) are the actual securities that are traded in US markets that represent foreign companies. ADRs are backed up by ADSs.

7.6 The claims of preferred shareholders are senior to those of the ordinary shareholders with respect to the distribution of both earnings and assets.

7.7 Cumulative preferred stock gives the holder the right to receive any dividends in arrears prior to the payment of dividends to ordinary shareholders. The call feature in a preference share issue allows the issuer to retire preference shares within a certain period of time at a pre-specified price. This feature is not usually exercisable until a few years after issuance. The call normally takes place at a price above the initial issuance price and may decrease according to a predefined schedule. The call feature allows the issuer to escape the fixed payment commitment of the preference share that would remain on the books indefinitely. The call feature is also needed in order to force conversion of convertible preference shares.

7.8 Venture capitalists (VC) are typically business entities that are organised for the purpose of investing in attractive growth companies. Angel capitalists are generally wealthy individuals who provide private financing to new businesses. Organisations usually obtain angel financing first, then as their funding needs get too large for individual investors they seek funds from venture capitalists.

7.9 There are four ways in which institutional venture capitalists are most commonly organised:
• Small business investment companies (SBICs) are corporations chartered by the federal government.
• Financial VC funds are subsidiaries of financial institutions, particularly banks.
• *Corporate VC funds* are organisations, sometimes subsidiaries, established by non-financial organisations.

• *VC limited partnerships* are limited partnerships organised by professional VC organisations, who serve as general partner.

VC investments are made under a legal contract that clearly allocates responsibilities and ownership interest between existing owners and the VC fund or limited partnership. The specific financial terms will depend on factors such as the business structure, stage of development, and outlook. Although each VC investment is unique, the transaction will be structured to provide the VC with a high rate of return that is consistent with the typically high risk of such transactions.

7.10 The general steps that a private organisation must go through to go public via an *IPO* are listed below:

• The organisation must obtain the approval of its current shareholders.

• The organisation’s auditors and lawyers must certify that all documents for the organisation are legitimate.

• The organisation then finds an investment bank willing to underwrite the offering.

• A registration statement must then be filed with the JSE.

• Once the registration statement is approved by the SEC the investment public can begin analysing the organisation’s prospects.

7.11 The *investment banker’s (IB)* main activity is to underwrite the issue. In addition to underwriting the *IB* provides the issuer with advice about pricing and other important aspects of the issue.

The *IB* may organise an *underwriting syndicate* to help underwrite the issue and thus to share part of the risk. The *IB* and the syndicate will put together a *selling group* who share the responsibility of selling a portion of the issue.
4. The valuation of ordinary shares

*Study Gitman (2010, Chapter 7: Ordinary share valuation).*

The valuation of ordinary shares is difficult for the following reasons:

- Future cash flows are uncertain as earnings are dependent on such factors as the state of the economy, currency rates, operating costs, interest rates, product acceptance and the level of competition in the branch of industry.

- Ordinary shares have no maturity and organisations are assumed to have an indefinite life.

- The cost of equity and the cost of capital are subject to greater uncertainty than for example the yields on bonds.

However, the valuation must be done based on the present value of the future cash flows. In the case of a company the future cash flows will accrue to ordinary shareholders as dividends. Changing expectations about the growth of dividends can have a significant impact on the value of an organisation. It is also possible to use free cash flows or earnings to value an organisation’s equity as there should be a close relationship between earnings, cash flow and future dividends. There are various methods available to determine the value of ordinary equity:

- **Dividend discount model.** The value of ordinary shares is determined by the present value of future dividends. This is also called the dividend growth model due to the effect of dividend growth on value.

- **Free cash flow model.** We determine the free cash flows to the organisation and discount this at the organisation’s cost of capital. The result is the value of the organisation. We deduct the value of debt from
the value of the organisation to arrive at the value of the ordinary equity. We may also discount the equity cash flows at the cost of equity.

- **Price multiples.** The value of ordinary equity is determined by using price multiples such as the price earnings ratio.

Ordinary shareholders expect to be rewarded through periodic cash dividends and an increasing share value. Like current owners, prospective owners and security analysts frequently estimate the organisation’s value. Investors purchase the share when they believe that the share is undervalued – when its true value is greater than its market value or price. They sell the share when they feel the market price is greater than its true value.

### 4.1 The dividend discount model

The basic valuation model can be specified as follows:

$$\begin{align*}
P_0 &= \frac{D_1}{(1 + r_s)^1} + \frac{D_2}{(1 + r_s)^2} + \cdots + \frac{D_\infty}{(1 + r_s)^\infty}
\end{align*}$$

Where

- \(P_0\) = value of ordinary share
- \(D_t\) = per-share dividend *expected* at the end of year \(t\)
- \(r_s\) = required return on ordinary shares

The equation can be simplified by redefining each year's dividend. In terms of growth, three models are discussed, namely the zero-growth, constant growth and variable growth.

**Zero growth model**

The zero dividend growth models assume that the organisation will pay the same dividend each year, year after year.
The equation shows that with zero growth, the value of a share would equal the present value of perpetuity of $D_1$ rand discounted at a rate $r_s$.

**Example**

- Alice estimates that the dividend of Eastwood Company, an established textile producer, is expected to remain constant at R3 per share indefinitely.
- If her required return on its equity is 15%, the share’s value is:

  \[ P_0 = \frac{D_1}{r_s} \]

  R20 (R3 ÷ 0.15) per share

**Constant-growth model**

The constant-growth model is a widely cited dividend valuation approach that assumes that dividends will grow at a constant rate, but a rate that is less than the required return.

\[
P_0 = \frac{D_0 \times (1 + g)^1}{(1 + r_s)^1} + \frac{D_0 \times (1 + g)^2}{(1 + r_s)^2} + \ldots + \frac{D_0 \times (1 + g)^\infty}{(1 + r_s)^\infty}
\]

The Gordon model is a common name for the constant-growth model that is widely cited in dividend valuation.

\[
P_0 = \frac{D_1}{r_s - g}
\]

**Example**

The Precept Paper Company has just paid an ordinary dividend of R1.15 and dividends are expected to grow at a constant growth rate of 8%
indefinitely. Investors require a rate of 13.4% on investments of similar risk. What is the intrinsic value of this company’s shares?

\[
\hat{P}_0 = \frac{D_0 (1 + g)}{r_s - g} = \frac{1.15(1.08)}{0.134 - 0.08} = R23.00
\]

Variable growth model

- The zero and constant-growth models do not allow for any shift in expected growth rates.
- The variable-growth model is a dividend valuation approach that allows for a change in the dividend growth rate.

To determine the value of a share of stock in the case of variable growth, we use a four-step procedure.

**Step 1.** Find the value of the cash dividends at the end of each year, \( D_t \), during the initial growth period, years 1 though \( N \).

\[ D_t = D_0 \times (1 + g_1)^t \]

**Step 2.** Find the present value of the dividends expected during the initial growth period.

\[
\sum_{t=1}^{N} \frac{D_0 \times (1 + g_1)^t}{(1 + r_s)^t} = \sum_{t=1}^{N} \frac{D_t}{(1 + r_s)^t}
\]

**Step 3.** Find the value of the stock at the end of the initial growth period, \( P_N = \frac{(D_{N+1})}{(r_s - g_2)} \), which is the present value of all dividends expected from year \( N + 1 \) to infinity, assuming a constant dividend growth rate, \( g_2 \).

\[
\frac{1}{(1 + r_s)^N} \times \frac{D_{N+1}}{r_s - g_2}
\]
Step 4. Add the present value components found in Steps 2 and 3 to find the value of the stock, $P_0$.

$$P_0 = \sum_{t=1}^{N} \frac{D_0 \times (1 + g_1)^t}{(1 + r_s)^t} + \frac{1}{(1 + r_s)^N} \times \frac{D_{N+1}}{r_s - g_2}$$

**Example**

The most recent annual (2012) dividend payment of Warren Industries, a rapidly growing boat manufacturer, was R1.50 per share. The organisation’s financial manager expects that these dividends will increase at a 10% annual rate, $g_1$, over the next three years. At the end of three years (the end of 2015), the organisation’s mature product line is expected to result in a slowing of the dividend growth rate to 5% per year, $g_2$, for the foreseeable future. The organisation’s required return, $r_s$, is 15%.

**Solution**

Steps 1 and 3 are detailed in the table below:

<table>
<thead>
<tr>
<th></th>
<th>End of year</th>
<th>$D_0 = D_{2012}$</th>
<th>$(1 + g_1)^t$</th>
<th>$D_t$</th>
<th>$(1 + r_s)^t$</th>
<th>Present value of dividends</th>
<th>Present value of stock at end of initial growth period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2013</td>
<td>1.50</td>
<td>1.100</td>
<td>1.65</td>
<td>1.150</td>
<td>1.43</td>
<td>1.43</td>
</tr>
<tr>
<td>2</td>
<td>2014</td>
<td>1.50</td>
<td>1.210</td>
<td>1.82</td>
<td>1.323</td>
<td>1.37</td>
<td>1.37</td>
</tr>
<tr>
<td>3</td>
<td>2015</td>
<td>1.50</td>
<td>1.331</td>
<td>2.00</td>
<td>1.521</td>
<td>1.32</td>
<td>1.32</td>
</tr>
</tbody>
</table>

Sum of present value of dividends = $\sum_{t=1}^{3} \frac{D_0 \times (1 + g_1)^t}{(1 + r_s)^t} = 4.12$
Step 3. The value of the share at the end of the initial growth period \((N = 2015)\) can be found by first calculating \(D_{N+1} = D_{2016}\).

\[
D_{2016} = D_{2015} \times (1 + 0.05) = \text{R}2.00 \times (1.05) = \text{R}2.10
\]

By using \(D_{2016} = \text{R}2.10\), a 15% required return, and a 5% dividend growth rate, we can calculate the value of the stock at the end of 2015 as follows:

\[
P_{2015} = \frac{D_{2016}}{(r_s - g)} = \frac{\text{R}2.10}{(0.15 - 0.05)} = \text{R}21.00
\]

Finally, the share value of \text{R}21 at the end of 2015 must be converted into a present (end of 2012) value.

\[
P_{2015} / \left(1 + r_s\right)^3 = \frac{\text{R}21}{1 + 0.15} = \text{R}13.81
\]

Step 4. Adding the PV of the initial dividend stream (found in Step 2) to the PV of the stock at the end of the initial growth period (found in Step 3), we get:

\[
P_{2012} = \text{R}4.14 + \text{R}13.82 = \text{R}17.93 \text{ per share}
\]

**Self-assessment exercise**


### 4.2 The free cash flow model

A free cash flow valuation model determines the value of an entire organisation as the present value of its expected free cash flows discounted at the organisation’s weighted average cost of capital, which is its expected average future cost of funds over the long run.

\[
V_C = \frac{FCF_1}{(1 + r_d)^1} + \frac{FCF_2}{(1 + r_d)^2} + \cdots + \frac{FCF_\infty}{(1 + r_d)^\infty}
\]
Where

\[
V_c = \text{value of the entire organisation}
\]

\[
FCF_t = \text{free cash flow expected at the end of year } t
\]

\[
r_a = \text{the organisation's weighted average cost of capital}
\]

Because the value of the entire organisation, \( V_C \), is the market value of the entire organisation (that is, of all assets), to find the ordinary share value, \( V_S \), we must subtract the market value of all of the organisation’s debt, \( V_D \), and the market value of preference shares, \( V_P \), from \( V_C \).

\[
V_S = V_C - V_D - V_P
\]

**Example**

Consider the information in the following table:

<table>
<thead>
<tr>
<th>Year ((t))</th>
<th>((FCF_t))</th>
<th>Other data</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>400 000</td>
<td>Growth rate of FCF, beyond 2017 to infinity, ( g_{FCF} = 3% )</td>
</tr>
<tr>
<td>2014</td>
<td>450 000</td>
<td>Weighted average cost of capital, ( r_a = 9% )</td>
</tr>
<tr>
<td>2015</td>
<td>520 000</td>
<td>Market value of all debt, ( V_D = 3 100 000 )</td>
</tr>
<tr>
<td>2016</td>
<td>560 000</td>
<td>Market value of preferred stock, ( V_P = 800 000 )</td>
</tr>
<tr>
<td>2017</td>
<td>600 000</td>
<td>Number of ordinary shares issued = 300 000</td>
</tr>
</tbody>
</table>

Step 1. Calculate the present value of the free cash flow occurring from the end of 2018 to infinity, measured at the beginning of 2018.
Step 2. Add the present value of the FCF from 2018 to infinity, which is measured at the end of 2017, to the 2017 FCF value to get the total FCF in 2017.

\[
\text{Total FCF}_{2017} = R600,000 + R10,300,000 = R10,900,000
\]

Step 3. Find the sum of the present values of the FCFs for 2013 through 2017 to determine the value of the entire company, \( V_C \). This step is detailed in the following table:

<table>
<thead>
<tr>
<th>Year ( t )</th>
<th>( FCF_t ) ( (1) )</th>
<th>( (1 + \rho)^t ) ( (2) )</th>
<th>Present value of ( FCF_t ) ( (3) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>400 000</td>
<td>1.090</td>
<td>366,972</td>
</tr>
<tr>
<td>2014</td>
<td>450 000</td>
<td>1.188</td>
<td>378,788</td>
</tr>
<tr>
<td>2015</td>
<td>520 000</td>
<td>1.295</td>
<td>401,544</td>
</tr>
<tr>
<td>2016</td>
<td>560 000</td>
<td>1.412</td>
<td>396,601</td>
</tr>
<tr>
<td>2017</td>
<td>10,900,000(^a)</td>
<td>1.539</td>
<td>7,082,521</td>
</tr>
</tbody>
</table>

Value of entire company, \( V_C = 8,626,426\(^b\) |

\(^a\)This amount is the sum of the \( FCF_{2017} \) of 500 000 from Table 7.4 and the 300,000 value of the \( FCF_{2018\rightarrow\infty} \) calculated in Step 1.

\(^b\)This value of the entire company is based on the rounded values that appear in the table. The precise value found without rounding is 8,628,234.

Step 4. Calculate the value of the ordinary shares.

\[ V_S = R8,626,426 - R3,100,000 - R800,000 = R4,726,426 \]

The value of Dewhurst's ordinary shares is therefore estimated to be R4,726,426. By dividing this total by the 300,000 shares that the organisation has issued, we get a value of R15.76 per share (R4,726,426 ÷ 300,000).
Self-assessment exercise

Find a solution for the following problem in Gitman (2010): P7-16.

4.3 Other approaches to ordinary share valuation

Study Gitman (2010, Chapter 7: Other approaches to share valuation).

Three approaches are discussed:

Book value

- Book value per share is the amount per share of ordinary shares that would be received if all of the organisation’s assets were sold for their exact book (accounting) value and the proceeds remaining after paying all liabilities (including preference shares) were divided among the ordinary stockholders.

- This method lacks sophistication and can be criticised on the basis of its reliance on historical balance sheet data.

- It ignores the organisation’s expected earning potential and generally lacks any true relationship to the organisation’s value in the marketplace.

Liquidation value

- Liquidation value per share is the actual amount per share of ordinary shares that would be received if all of the organisation’s assets were sold for their market value, liabilities (including preference shares) were paid, and any remaining money was divided among the ordinary shareholders.
• This measure is more realistic than book value because it is based on current market values of the organisation's assets.

• However, it still fails to consider the earning power of those assets.

**Market ratios**

In addition to DCF techniques, investors can also use financial ratios:

• These evaluate the market value of a share relative to some accounting measures, such as earnings per share, cash flow, sales or book value.

• The most important include the
  - Price : Earnings ratio
  - Price : Book ratio.

The price earnings

  o Shows how much investors are willing to pay per rand of reported earnings.

\[
P:E = \frac{\text{Price per share (MPS)}}{\text{Earnings per share (EPS)}}
\]

\[
\text{EPS} = \frac{\text{Net profit after tax}}{\text{Number of outstanding shares}}
\]

  o Although this technique has some flaws, it is widely used to compare companies to competitors in the same sector.

  o A higher P : E ratio is generally favoured.

**Example**

Calculate and interpret the P : E ratio for the Empire Shoe Company:

• Net profit after tax \(= \text{R117,000,000}\)

• Number of shares issued \(= 50\text{m}\)
• Current market price = R23
• EPS = \( \frac{117,000,000}{50,000,000} \) = 2.33
• P : E ratio = 9.83 times

Interpretation: Current market price per share of the company is 9.83 times larger than the company’s last reported EPS. Investors are thus willing to pay R9.83 for every R1 of reported earnings.

Theory for P/E valuation:

– The price/earnings multiple approach to valuation does have a theoretical explanation.

– If we view 1 divided by the price/earnings ratio, or the earnings/price ratio, as the rate at which investors discount the organisation’s earnings, and if we assume that the projected earnings per share will be earned indefinitely (i.e., no growth in earnings per share), the price/earnings multiple approach can be looked on as a method of finding the present value of a perpetuity of projected earnings per share at a rate equal to the earnings/price ratio.

– This method is, in effect, a form of the zero-growth model.

**Price : Book ratio**

• This ratio is calculated as follows:

\[
P : B = \frac{\text{Price per share (MPS)}}{\text{Book value per share (BPS)}}
\]

\[
\text{BPS} = \frac{\text{Ordinary shareholders' equity}}{\text{Number of outstanding shares}}
\]

• For healthy organisations the P : B should exceed one.
Example

Calculate and interpret the P : B ratio for the Empire Shoe Company:

- Ordinary shareholders’ equity = R936,000,000
- Number of shares issued = 50m
- Current market price = R23
- Book value per share = 18.72
- P : B ratio = 1.23 times

Interpretation: The current market price per ordinary share is 1.23 times larger than the book value per ordinary share.

Self-assessment exercise

Find solutions for the following problems in Gitman (2010): P 7-18 and P7-19.

5. Decision making and ordinary share value

Study Gitman (2010, Chapter 7: Decision making and ordinary share valuation).

- Assuming that economic conditions remain stable, any management action that would cause current and prospective shareholders to raise their dividend expectations should increase the organisation’s value.

- Therefore, any action of the financial manager that will increase the level of expected dividends without changing risk (the required return) should be undertaken, because it will positively affect owners’ wealth.

- Any measure of required return consists of two components: a risk-free rate and a risk premium. We express this relationship as follows:
\[ r_s = r^* + IP + R_P \]

\[ \text{risk-free rate, } R_F \]
\[ \text{risk premium} \]

- Any action taken by the financial manager that increases the risk shareholders must bear will also increase the risk premium required by shareholders, and hence the required return.

- Additionally, the required return can be affected by changes in the risk free rate – even if the risk premium remains constant.

6. Market efficiency


- Economically rational buyers and sellers use their assessment of an asset’s risk and return to determine its value.

- In competitive markets with many active participants, the interactions of many buyers and sellers result in an equilibrium price – the market value – for each security.

- Because the flow of new information is almost constant, stock prices fluctuate, continuously moving toward a new equilibrium that reflects the most recent information available. This general concept is known as market efficiency.

- The efficient-market hypothesis (EMH) is a theory describing the behaviour of an assumed ‘perfect’ market in which
• securities are in equilibrium,

• security prices fully reflect all available information and react swiftly to new information, and

• because shares are fully and fairly priced, investors need not waste time looking for mispriced securities.

• Although considerable evidence supports the concept of market efficiency, a growing body of academic evidence has begun to cast doubt on the validity of this notion.

• **Behavioural finance** is a growing body of research that focuses on investor behaviour and its impact on investment decisions and stock prices. Advocates are commonly referred to as ‘behaviourists’.

• **Understanding human behaviour** helps us understand investor behaviour.

  • *Regret theory* deals with the emotional reaction people experience after realising they have made an error in judgement.

  • Some investors rationalise their decision to buy certain stocks with ‘everyone else is doing it’ (*herding*).

  • People have a tendency to place particular events into mental compartments, and the difference between these compartments sometimes impacts behaviour more than the events themselves.

  • Prospect theory suggests that people express a different degree of emotion toward gains than losses.

  • Anchoring is the tendency of investors to place more value on recent information.
Summary

- Holders of equity capital are owners of the organisation. Typically, only ordinary stockholders have a voice in management. Equity holders’ claims on income and assets are secondary to creditors’ claims and there is no maturity date.

- The ordinary shares of an organisation can be privately owned, closely owned, or publicly owned. It can be sold with or without a par value. Preemptive rights allow ordinary shareholders to avoid dilution of ownership when new shares are issued. Some organisations have two or more classes of ordinary shares that differ mainly in having unequal voting rights. Proxies transfer voting rights from one party to another. The decision to pay dividends to ordinary shareholders is made by the organisation’s board of directors.

- Preference shareholders have preference over ordinary shareholders with respect to the distribution of earnings and assets. They do not normally have voting privileges. Preferred stock issues may have certain restrictive covenants, cumulative dividends, a call feature, and a conversion feature.

- Market efficiency assumes that the quick reactions of rational investors to new information cause the market value of ordinary shares to adjust upward or downward quickly.

- The value of a share is the present value of all future dividends it is expected to provide over an infinite time horizon. Three dividend growth models – zero-growth, constant-growth, and variable-growth – can be considered in common stock valuation. The most widely cited model is the constant-growth model.

- The free cash flow valuation model finds the value of the entire company by discounting the organisation’s expected free cash flow at its weighted average cost of capital. The share value is
found by subtracting the market values of the organisation’s debt and preference shares from the value of the entire organisation.

- Book value per share is the amount per ordinary share that would be received if all of the organisation’s assets were sold for their exact book (accounting) value and the proceeds remaining after paying all liabilities (including preference shares) were divided among the ordinary shareholders.

- Liquidation value per share is the actual amount per ordinary share that would be received if all of the organisation’s assets were sold for their market value, liabilities (including preference share capital) were paid, and the remaining money was divided among the ordinary shareholders.

- The price/earnings (P/E) multiple approach estimates stock value by multiplying the organisation’s expected earnings per share (EPS) by the average price/earnings (P/E) ratio for the industry.

- In a stable economy, any action of the financial manager that increases the level of expected dividends without changing risk should increase share value; any action that reduces the level of expected dividends without changing risk should reduce share value. Similarly, any action that increases risk (required return) will reduce share value; any action that reduces risk will increase share value. An assessment of the combined effect of return and risk on share value must be part of the financial decision-making process.
From a marketing viewpoint we need to understand credit selection and monitoring because sales will be affected by the availability of credit to buyers and sales will also be affected by inventory management. Marketers also need to understand how trade receivables and inventory can be used as loan collateral; the procedures used by the organisation to secure short-term loans with such collateral could affect customer relationships.

**Specific learning outcomes**

After studying this unit, you should be able to:

- Understand working capital management, net working capital, and the related trade-off between profitability and risk.
- Explain the cash conversion cycle.
- Discuss inventory management.
- Explain the credit selection process.
- Explain trade receivables management.
- Explain the management of receipts and disbursements.
- Explain the role of spontaneous liabilities in an organisation.
- Differentiate between the different sources of unsecured short-term loans.
- Differentiate between the different sources of secured short-term loans.
1. **Introduction**

*Study Gitman (2010, Chapter 9: Net working capital fundamentals).*

**Short-term financial management**

**Working capital (or short-term financial) management** is the management of current assets and current liabilities:

- Current assets include inventory, accounts receivable, marketable securities, and cash.
- Current liabilities include notes payable, accruals, and accounts payable.
- Organisations are able to reduce financing costs or increase the funds available for expansion by minimising the amount of funds tied up in working capital.

Chief financial officers (CFO's) value working capital management:

- A survey of CFOs from organisations around the world suggests that working capital management tops the list of most valued finance functions.
- Among 19 different finance functions, CFOs viewed working capital management as equally important as capital structure, debt issuance and management, bank relationships, and tax management.
- CFOs viewed the performance of working capital management as only being better than the performance of pension management.
- Consistent with their view that working capital management is a high value but low satisfaction activity, it was identified as the finance function second most in need of additional resources.
Net working capital

Working capital refers to current assets, which represent the portion of investment that circulates from one form to another in the ordinary conduct of business.

Net working capital is the difference between the organisation’s current assets and its current liabilities; can be positive or negative.

Trade-off between profitability and risk

Profitability is the relationship between revenues and costs generated by using the organisation’s assets – both current and fixed – in productive activities. An organisation can increase its profits by (1) increasing revenues or (2) decreasing costs.

Risk (of insolvency) is the probability that an organisation will be unable to pay its bills as they come due.

Insolvent describes an organisation that is unable to pay its bills as they come due.

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Change in ratio</th>
<th>Effect on profit</th>
<th>Effect on risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current assets</td>
<td>Increase</td>
<td>Decrease</td>
<td>Decrease</td>
</tr>
<tr>
<td>Total assets</td>
<td>Decrease</td>
<td>Increase</td>
<td>Increase</td>
</tr>
<tr>
<td>Current liabilities</td>
<td>Increase</td>
<td>Increase</td>
<td>Increase</td>
</tr>
<tr>
<td>Total assets</td>
<td>Decrease</td>
<td>Decrease</td>
<td>Decrease</td>
</tr>
</tbody>
</table>

2. Cash conversion cycle

Study Gitman (2010, Chapter 14: Cash conversion cycle).
The **cash conversion cycle (CCC)** is the length of time required for a company to convert cash invested in its operations to cash received as a result of its operations.

An organisation’s **operating cycle (OC)** is the time from the beginning of the production process to collection of cash from the sale of the finished product. It is measured in elapsed time by summing the average age of inventory (AAI) and the average collection period (ACP).

\[
OC = AAI + ACP
\]

An organisation can lower its working capital if it can speed up its operating cycle. For example, if an organisation accepts bank credit (like a Visa card), it will receive cash sooner after the sale is transacted than if it has to wait until the customer pays its accounts receivable.

**Calculating the cash conversion cycle**

- The process of producing and selling a product also includes the purchase of production inputs (raw materials) on account, which results in accounts payable.
- The time it takes to pay the accounts payable, measured in days, is the average payment period (APP). The operating cycle less the average payment period yields the cash conversion cycle. The formula for the cash conversion cycle is:

\[
CCC = OC - APP
\]

Substituting for OC, we can see that the cash conversion cycle has three main components, as shown in the following equation: (1) average age of the inventory, (2) average collection period, and (3) average payment period.

\[
CCC = AAI + ACP - APP
\]
Funding requirements of the cash conversion cycle

A **permanent funding requirement** is a constant investment in operating assets resulting from constant sales over time.

A **seasonal funding requirement** is an investment in operating assets that varies over time as a result of cyclic sales.

An **aggressive funding strategy** is a funding strategy under which the organisation funds its seasonal requirements with short-term debt and its permanent requirements with long-term debt.

A **conservative funding strategy** is a funding strategy under which the organisation funds both its seasonal and its permanent requirements with long-term debt.

*Work through the example of Shabalala Pump Company in Gitman (2010).*

**Strategies for managing the cash conversion cycle**

The goal is to minimise the length of the cash conversion cycle, which minimises negotiated liabilities. This goal can be realised through use of the following strategies:
1. Turn over inventory as quickly as possible without stock-outs that result in lost sales.
2. Collect accounts receivable as quickly as possible without losing sales from high-pressure collection techniques.
3. Manage mail, processing, and clearing time to reduce them when collecting from customers and to increase them when paying suppliers.
4. Pay accounts payable as slowly as possible without damaging the organisation’s credit rating.

Self-assessment exercise

Find a solution for the following problem in Gitman (2010): P14.3.

3. Inventory management

Study Gitman (2010, Chapter 14: Inventory management).

Differing viewpoints about appropriate inventory levels commonly exist among an organisation’s finance, marketing, manufacturing, and purchasing managers.

- The financial manager’s general disposition toward inventory levels is to keep them low, to ensure that the organisation’s money is not being unwisely invested in excess resources.
- The marketing manager, on the other hand, would like to have large inventories of the organisation’s finished products.
- The manufacturing manager’s major responsibility is to implement the production plan so that it results in the desired amount of finished goods of acceptable quality available on time at a low cost.
- The purchasing manager is concerned solely with the raw materials inventories.
**Common techniques for managing inventory**

The ABC inventory system is an inventory management technique that divides inventory into three groups – A, B, and C, in descending order of importance and level of monitoring, on the basis of the dollar investment in each.

- The A group includes those items with the largest dollar investment. Typically, this group consists of 20 percent of the organisation’s inventory items but 80 percent of its investment in inventory.
- The B group consists of items that account for the next largest investment in inventory.
- The C group consists of a large number of items that require a relatively small investment.

The inventory group of each item determines the item’s level of monitoring.

- The A group items receive the most intense monitoring because of the high dollar investment. Typically, A group items are tracked on a perpetual inventory system that allows daily verification of each item’s inventory level.
- B group items are frequently controlled through periodic, perhaps weekly, checking of their levels.
- C group items are monitored with unsophisticated techniques, such as the **two-bin method**; an unsophisticated inventory-monitoring technique that involves reordering inventory when one of two bins is empty.

The large rand investment in A and B group items suggests the need for a better method of inventory management than the ABC system.

The **economic order quantity (EOQ) model** is an inventory management technique for determining an item’s optimal order size, which is the size that minimises the total of its order costs and carrying costs.
The EOQ model is an appropriate model for the management of A and B group items.

EOQ assumes that the relevant costs of inventory can be divided into order costs and carrying costs.

- **Order costs** are the fixed clerical costs of placing and receiving an inventory order.
- **Carrying costs** are the variable costs per unit of holding an item in inventory for a specific period of time.

The EOQ model analyses the trade-off between order costs and carrying costs to determine the order quantity that minimises the total inventory cost.

A formula can be developed for determining the organisation’s EOQ for a given inventory item, where:

- \( S \) = usage in units per period
- \( O \) = order cost per order
- \( C \) = carrying cost per unit per period
- \( Q \) = order quantity in units

The order cost can be expressed as the product of the cost per order and the number of orders. Because the number of orders equals the usage during the period divided by the order quantity \((S/Q)\), the order cost can be expressed as follows:

\[
\text{Order cost} = O \times \frac{S}{Q}
\]

The carrying cost is defined as the cost of carrying a unit of inventory per period multiplied by the organisation’s average inventory. The average inventory is the order quantity divided by 2 \((Q/2)\), because inventory is assumed to be depleted at a constant rate. Thus carrying cost can be expressed as follows:

\[
\text{Carrying cost} = C \times \frac{Q}{2}
\]
The organisation’s total cost of inventory is found by summing the order cost and the carrying cost. Thus the total cost function is

\[
\text{Total cost} = (O \times \frac{S}{Q}) + (C \times \frac{Q}{2})
\]

Because the EOQ is defined as the order quantity that minimises the total cost function, we must solve the total cost function for the EOQ. The resulting equation is

\[
\text{EOQ} = \sqrt{\frac{2 \times S \times O}{C}}
\]

The **reorder point** is the point at which to reorder inventory, expressed as days of lead time \(x\) daily usage.

Because lead times and usage rates are not precise, most organisations hold **safety stock** – extra inventory that is held to prevent stock-outs of important items.

**Example**

MAX Company, a producer of dinnerware, has an A group inventory item that is vital to the production process. This item costs R1,500 and MAX uses 1,100 units of the item per year. MAX wants to determine its optimal order strategy for the item. To calculate the EOQ, we need the following inputs:

- Order cost per order = R150
- Carrying cost per unit per year = R200

Thus, the reorder point for MAX depends on the number of days MAX operates per year.

- Assuming that MAX operates 250 days per year and uses 1,100 units of this item, its daily usage is 4.4 units \((1,100 \div 250)\).
- If its lead time is 2 days and MAX wants to maintain a safety stock of 4 units, the reorder point for this item is 12.8 units \([(2 \times 4.4) + 4]\).
- However, orders are made only in whole units, so the order is placed when the inventory falls to 13 units.
A **just-in-time (JIT) system** is an inventory management technique that minimises inventory investment by having materials arrive at exactly the time they are needed for production.

- Because its objective is to minimise inventory investment, a JIT system uses no (or very little) safety stock.
- Extensive coordination among the organisation’s employees, its suppliers, and shipping companies must exist to ensure that material inputs arrive on time.
- Failure of materials to arrive on time results in a shutdown of the production line until the materials arrive.
- Likewise, a JIT system requires high-quality parts from suppliers.

**Computerised systems for resource control**

A **materials requirement planning (MRP)** system is an inventory management technique that applies EOQ concepts and a computer to compare production needs to available inventory balances and determine when orders should be placed for various items on a product’s bill of materials.

**Manufacturing resource planning II (MRP II)** is a sophisticated computerised system that integrates data from numerous areas such as finance, accounting, marketing, engineering, and manufacturing and generates production plans as well as numerous financial and management reports.

**Enterprise resource planning (ERP)** is a computerised system that electronically integrates external information about the organisation’s suppliers and customers with the organisation’s departmental data so that information on all available resources – human and material – can be instantly obtained in a fashion that eliminates production delays and controls costs.

---

**Self-assessment exercise**

4. Accounts receivable management

Study Gitman (2010, Chapter 14: Trade receivables management).

The second component of the cash conversion cycle is the average collection period. The average collection period has two parts:

1. The time from the sale until the customer mails the payment.
2. The time from when the payment is mailed until the organisation has the collected funds in its bank account.

The objective for managing accounts receivable is to collect accounts receivable as quickly as possible without losing sales from high-pressure collection techniques. Accomplishing this goal encompasses three topics: (1) credit selection and standards, (2) credit terms, and (3) credit monitoring.

Credit selection and standards

Credit standards are an organisation’s minimum requirements for extending credit to a customer.

The five C’s of credit are as follows:

1. **Character**: The applicant’s record of meeting past obligations.
2. **Capacity**: The applicant’s ability to repay the requested credit.
3. **Capital**: The applicant’s debt relative to equity.
4. **Collateral**: The amount of assets the applicant has available for use in securing the credit.
5. **Conditions**: Current general and industry-specific economic conditions, and any unique conditions surrounding a specific transaction.

**Credit scoring** is a credit selection method commonly used with high-volume/small-rand credit requests; relies on a credit score determined by
applying statistically derived weights to a credit applicant’s scores on key financial and credit characteristics.

The organisation sometimes will contemplate changing its credit standards in an effort to improve its returns and create greater value for its owners. To demonstrate, consider the following changes and effects on profits expected to result from the relaxation of credit standards.

<table>
<thead>
<tr>
<th>Effects of Relaxation of Credit Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>------------------------------</td>
</tr>
<tr>
<td>Sales volume</td>
</tr>
<tr>
<td>Investment in accounts receivable</td>
</tr>
<tr>
<td>Bad-debt expenses</td>
</tr>
</tbody>
</table>

**Example**

Dodd Tool Co. is currently selling a product for R10 per unit. Sales (all on credit) for last year were 60,000 units. The variable cost per unit is R6. The organisation’s total fixed costs are R120,000. The organisation is currently contemplating a relaxation of credit standards that is expected to result in the following:

- A 5% increase in unit sales to 63,000 units
- An increase in the average collection period from 30 days (the current level) to 45 days
- An increase in bad-debt expenses from 1% of sales (the current level) to 2%.

The organisation’s required return on equal-risk investments, which is the opportunity cost of tying up funds in accounts receivable, is 15%.

Because fixed costs are ‘sunk’ and therefore are unaffected by a change in the sales level, the only cost relevant to a change in sales is variable costs. Sales are expected to increase by 5%, or 3,000 units. The profit contribution per unit will equal the difference between the sale price per unit (R10) and the variable cost per unit (R6). The profit contribution per unit therefore will be R4. The total
additional profit contribution from sales will be R12,000 (3,000 units × R4 per unit).

To determine the cost of the marginal investment in accounts receivable, Dodd must find the difference between the cost of carrying receivables under the two credit standards. Because its concern is only with the out-of-pocket costs, the relevant cost is the variable cost. The average investment in accounts receivable can be calculated by using the following formula:

\[
\text{Average investment in accounts receivable} = \frac{\text{Total variable cost of annual sales}}{\text{Turnover of accounts receivable}}
\]

\[
\text{Turnover of accounts receivable} = \frac{365}{\text{Average collection period}}
\]

Total variable cost of annual sales:

- Under present plan: (R6 × 60,000 units) = R360,000
- Under proposed plan: (R6 × 63,000 units) = R378,000

The turnover of accounts receivable is the number of times each year that the organisation’s accounts receivable are actually turned into cash. It is found by dividing the average collection period into 365 (the number of days assumed in a year).

Turnover of accounts receivable:

- Under present plan: (365/30) = 12.2
- Under proposed plan: (365/45) = 8.1

By substituting the cost and turnover data just calculated into the average investment in accounts receivable equation for each case, we get the following average investments in accounts receivable:

- Under present plan: (R360,000/12.2) = R29,508
- Under proposed plan: (R378,000/8.1) = R46,667

Cost of marginal investment in accounts receivable

\[
\text{Average investment under proposed plan} \quad R46,667
\]
- \text{Average investment under present plan} \quad \textbf{29,508}
Marginal investment in accounts receivable  $17,159$

$\times$ Required return on investment  \hspace{1cm} 0.15

Cost of marginal investment in A/R  $\hspace{1cm} 2,574$

The resulting value of $2,574$ is considered a cost because it represents the maximum amount that could have been earned on the $17,159$ had it been placed in the best equal-risk investment alternative available at the organisation’s required return on investment of $15\%$.

Cost of marginal bad debts

Under proposed plan:  $(0.02 \times 10/\text{unit} \times 63,000 \text{ units}) = 12,600$

Under present plan:  $(0.01 \times 10/\text{unit} \times 60,000 \text{ units}) = 6,000$

Cost of marginal bad debts  $\hspace{1cm} 6,600$

---

**Effects on Dodd Tool of a Relaxation of Credit Standards**

Additional profit contribution from sales

$12,000$

Cost of marginal investment in A/R$^2$

- Average investment under proposed plan:
  
  \[
  \frac{6 \times 63,000}{8.1} = \frac{378,000}{8.1} \approx 46,667
  \]

- Average investment under present plan:
  
  \[
  \frac{6 \times 60,000}{12.2} = \frac{360,000}{12.2} \approx 29,508
  \]

Marginal investment in A/R  $17,159$

Cost of marginal investment in A/R $(0.15 \times 17,159) = (2,574)$

Cost of marginal bad debts

- Bad debts under proposed plan $(0.02 \times 10 \times 63,000) = 12,600$
- Bad debts under present plan $(0.01 \times 10 \times 60,000) = 6,000$

Net profit from implementation of proposed plan  $2,826$

---

$^2$The denominators $8.1$ and $12.2$ in the calculation of the average investment in accounts receivable under the proposed and present plans are the accounts receivable turnovers for each of these plans $(365 \div 45 = 8.1$

and $365 \div 30 = 12.2$).

Credit management is difficult enough for managers of purely domestic companies, and these tasks become much more complex for companies that operate internationally.
This is partly because international operations typically expose an organisation to exchange rate risk.

It is also due to the dangers and delays involved in shipping goods long distances and in having to cross at least two international borders.

Credit terms

Credit terms are the terms of sale for customers who have been extended credit by the organisation.

A cash discount is a percentage deduction from the purchase price; available to the credit customer that pays its account within a specified time.

For example, terms of 2/10 net 30 mean the customer can take a 2 percent discount from the invoice amount if the payment is made within 10 days of the beginning of the credit period or can pay the full amount of the invoice within 30 days.

Example

MAX Company has annual sales of R10 million and an average collection period of 40 days (turnover = 365/40 = 9.1). In accordance with the organisation’s credit terms of net 30, this period is divided into 32 days until the customers place their payments in the mail (not everyone pays within 30 days) and 8 days to receive, process, and collect payments once they are mailed.

MAX is considering initiating a cash discount by changing its credit terms from net 30 to 2/10 net 30. The organisation expects this change to reduce the amount of time until the payments are placed in the mail, resulting in an average collection period of 25 days (turnover = 365/25 = 14.6).
Analysis of Initiating a Cash Discount for MAX Company

Additional profit contribution from sales

\[
\text{Profit} = 50 \times (3,000 - 2,300) = 35,000
\]

Cost of marginal investment in A/R:

Average investment presently (without discount):

\[
\frac{2,300 \times 1,100 \text{ units}}{9.1} = \frac{2,530,000}{9.1} = 278,022
\]

Average investment with proposed cash discount:

\[
\frac{2,300 \times 1,150 \text{ units}}{14.6} = \frac{2,645,000}{14.6} = 181,164
\]

Reduction in accounts receivable investment:

\[
\text{Reduction} = 96,858
\]

Cost savings from reduced investment in accounts receivable (0.14 \times 96,858):

\[
\text{Cost savings} = 13,560
\]

Cost of cash discount (0.02 \times 0.80 \times 1,150 \times 3,000):

\[
\text{Cost of cash discount} = 55,200
\]

Net profit from initiation of proposed cash discount:

\[
\text{Net profit} = 6,640
\]

\[\text{In analyzing the investment in accounts receivable, we use the variable cost of the product sold (1,500 raw materials cost + 800 production cost = 2,300 per unit variable cost) instead of the sale price, because the variable cost is a better indicator of the firm's investment.}\]

\[\text{The average investment in accounts receivable with the proposed cash discount is estimated to be tied up for an average of 25 days instead of the 40 days under the original terms.}\]

\[\text{MAX's opportunity cost of funds is 14%.}\]

A cash discount period is the number of days after the beginning of the credit period during which the cash discount is available. The net effect of changes in this period is difficult to analyze because of the nature of the forces involved.

For example, if an organisation were to increase its cash discount period by 10 days (for example, changing its credit terms from 2/10 net 30 to 2/20 net 30), the following changes would be expected to occur: (1) Sales would increase, positively affecting profit, (2) bad-debt expenses would decrease, positively affecting profit, (3) the profit per unit would decrease as a result of more people taking the discount, negatively affecting profit.

The credit period is the number of days after the beginning of the credit period until full payment of the account is due. Changes in the credit period also affect an organisation’s profitability. For example, increasing an organisation’s credit period from net 30 days to net 45 days should increase sales, positively affecting profit. But both the
investment in accounts receivable and bad-debt expenses would also increase, negatively affecting profit.

**Credit monitoring** is the ongoing review of an organisation’s accounts receivable to determine whether customers are paying according to the stated credit terms.

- If they are not paying in a timely manner, credit monitoring will alert the organisation to the problem.
- Slow payments are costly to an organisation because they lengthen the average collection period and thus increase the organisation’s investment in accounts receivable.
- Two frequently used techniques for credit monitoring are average collection period and aging of accounts receivable.

The average collection period has two components: (1) the time from sale until the customer places the payment in the mail and (2) the time to receive, process, and collect the payment once it has been mailed by the customer. The formula for finding the average collection period is:

\[
\text{Average collection period} = \frac{\text{Accounts receivable}}{\text{Average sales per day}}
\]

Assuming receipt, processing, and collection time is constant, the average collection period tells the organisation, on average, when its customers pay their accounts.

An **aging schedule** is a credit-monitoring technique that breaks down accounts receivable into groups on the basis of their time of origin; it indicates the percentages of the total accounts receivable balance that have been outstanding for specified periods of time.
Self-assessment exercise


5. Management of receipts and disbursements

Study Gitman (2010, Chapter 14: Management of receipts and disbursements).

**Float** refers to funds that have been sent by the payer but are not yet usable funds to the payee. Float has three component parts:

1. **Mail float** is the time delay between when payment is placed in the mail and when it is received.
2. **Processing float** is the time between receipt of a payment and its deposit into the organisation’s account.
3. **Clearing float** is the time between deposit of a payment and when spendable funds become available to the organisation.

**Speeding up collections**

**Speeding up collections** reduces customer collection float time and thus reduces the organisation’s average collection period, which reduces the investment the organisation must make in its cash conversion cycle. A popular technique for speeding up collections is a **lockbox system**, which is a collection procedure in which customers mail payments to a post office box that is emptied regularly by the organisation’s bank, which processes the payments and deposits them in the organisation’s account. This system speeds up collection time by reducing processing time as well as mail and clearing time.
**Slowing down payments**

Float is also a component of the organisation's average payment period. **Controlled disbursing** is the strategic use of mailing points and bank accounts to lengthen mail float and clearing float, respectively.

**Stretching accounts payable – is it a good policy?**

- There are two negative ramifications of stretching accounts payable (A/P).
  - First, the stretching out of payables can be pushed too far, and a business can get tagged as a slow-payer. Vendors will eventually put increasing pressure on the company to make more timely payments.
  - Stretching accounts payables also raises ethical issues. First, it may cause the organisation to violate the agreement it entered into with its supplier when it purchased the merchandise. More important to investors, the organisation may stretch A/P to artificially boost reported operating cash flow during a reporting period. In other words, organisations can improve reported operating cash flows due solely to a decision to slow the payment rate to vendors.

- While vendor discounts for early payment are very rewarding, what are some of the difficulties that may arise to keep an organisation from taking advantage of those discounts?

**Cash concentration**

**Cash concentration** is the process used by the organisation to bring lockbox and other deposits together into one bank, often called the concentration bank. Cash concentration has three main advantages.

1. First, it creates a large pool of funds for use in making short-term cash investments. Because there is a fixed-cost component in the transaction cost associated with such investments, investing a
single pool of funds reduces the organisation’s transaction costs. The larger investment pool also allows the organisation to choose from a greater variety of short-term investment vehicles.

2. Second, concentrating the organisation’s cash in one account improves the tracking and internal control of the organisation’s cash.

3. Third, having one concentration bank enables the organisation to implement payment strategies that reduce idle cash balances.

A **depository transfer check (DTC)** is an unsigned check drawn on one of an organisation’s bank accounts and deposited in another.

An **ACH (automated clearing house) transfer** is a pre-authorised electronic withdrawal from the payer’s account and deposit into the payee’s account via a settlement among banks by the automated clearinghouse, or ACH.

A **wire transfer** is an electronic communication that, via bookkeeping entries, removes funds from the payer’s bank and deposits them in the payee’s bank.

**Zero-balance accounts**

A **zero-balance account (ZBA)** is a disbursement account that always has an end-of-day balance of zero because the organisation deposits money to cover checks drawn on the account only as they are presented for payment each day.

6. **Current liabilities management**

   ![Study Gitman](2010, Chapter 15: Current liabilities management).
6.1 Spontaneous liabilities

**Spontaneous liabilities** are financing that arises from the normal course of business; the two major short-term sources of such liabilities are accounts payable and accruals.

**Unsecured short-term financing** is short-term financing obtained without pledging specific assets as collateral.

- The organisation should take advantage of these ‘interest-free’ sources of unsecured short-term financing whenever possible.

**Accounts payable management**

- Accounts payable are the major source of unsecured short-term financing for business organisations.
- They result from transactions in which merchandise is purchased but no formal note is signed to show the purchaser’s liability to the seller.
- The average payment period has two parts: (1) the time from the purchase of raw materials until the organisation mails the payment and (2) payment float time (the time it takes after the organisation mails its payment until the supplier has withdrawn spendable funds from the organisation’s account).

**Accounts payable management** is management by the organisation of the time that elapses between its purchase of raw materials and its mailing payment to the supplier.

- When the seller of goods charges no interest and offers no discount to the buyer for early payment, the buyer’s goal is to pay as slowly as possible without damaging its credit rating.
- This allows for the maximum use of an interest-free loan from the supplier and will not damage the organisation’s credit rating (because the account is paid within the stated credit terms).

The credit terms that an organisation is offered by its suppliers enable it to delay payments for its purchases.
Lebombo Industries, operator of a small chain of video stores, purchased R1,000 worth of merchandise on February 27 from a supplier extending terms of 2/10 net 30 EOM. If the organisation takes the cash discount, it must pay R980 \([R1,000 - (0.02 \times R1,000)]\) by March 10, thereby saving R20.

The **cost of giving up a cash discount** is the implied rate of interest paid to delay payment of an account payable for an additional number of days.

- To calculate the cost of giving up the cash discount, the true purchase price must be viewed as the discounted cost of the merchandise, which is R980 for Lebombo Industries.
- Another way to say this is that Lebombo Industries’ supplier charges R980 for the goods as long as the bill is paid in 10 days.
- If Lebombo takes 20 additional days to pay (by paying on day 30 rather than on day 10), they have to pay the supplier an additional R20 in ‘interest’.
- Therefore, the interest rate on this transaction is 2.04% \((R20 \div R980)\). Keep in mind that the 2.04% interest rate applies to a 20-day loan.

To calculate an annualised interest rate, we multiply the interest rate on this transaction times the number of 20-day periods during a year. The following
equation provides the general expression for calculating the annual percentage cost of giving up a cash discount:

\[
\text{Cost of giving up cash discount} = \frac{\text{CD}}{100\% - \text{CD}} \times \frac{365}{\text{N}}
\]

where

- \(\text{CD}\) = stated cash discount in percentage terms.
- \(\text{N}\) = number of days that payment can be delayed by giving up the cash discount.

A simple way to approximate the cost of giving up a cash discount is to use the stated cash discount percentage, \(\text{CD}\), in place of the first term of the previous equation:

\[
\text{Approximate cost of giving up cash discount} = \text{CD} \times \frac{365}{\text{N}}
\]

Substituting the values for \(\text{CD}\) (2%) and \(\text{N}\) (20 days) into these equations results in an annualised cost of giving up the cash discount of 37.24% \([(2\% ÷ 98\%) \times (365 ÷ 20)]\) and an approximation of 36.5% \[2\% \times (365 ÷ 20)]\).

**Self-assessment exercise**


**Accruals**

**Accruals** are liabilities for services received for which payment has yet to be made.

- The most common items accrued by an organisation are wages and taxes.
- Because taxes are payments to the government, their accrual cannot be manipulated by the organisation.
- However, the accrual of wages can be manipulated to some extent.
This is accomplished by delaying payment of wages, thereby receiving an interest-free loan from employees who are paid sometime after they have performed the work.

6.2 Unsecured sources of short-term loans


Bank loans

A short-term, self-liquidating loan is an unsecured short-term loan in which the use to which the borrowed money is put provides the mechanism through which the loan is repaid.

- These loans are intended merely to carry the organisation through seasonal peaks in financing needs that are due primarily to build-ups of inventory and accounts receivable.
- As the organisation converts inventories and receivables into cash, the funds needed to retire these loans are generated.
- Banks lend unsecured, short-term funds in three basic ways: through single-payment notes, lines of credit and revolving credit agreements.

The prime rate of interest (prime rate) is the lowest rate of interest charged by leading banks on business loans to their most important business borrowers.

- The prime rate fluctuates with changing supply-and-demand relationships for short-term funds.
- Banks generally determine the rate to be charged to various borrowers by adding a premium to the prime rate to adjust it for the borrower’s ‘riskiness’.
- The premium may amount to 4 percent or more, although most unsecured short-term loans carry premiums of less than 2 percent.
A **fixed-rate loan** is a loan with a rate of interest that is determined at a set increment above the prime rate and remains unvarying until maturity.

A **floating-rate loan** is a loan with a rate of interest initially set at an increment above the prime rate and allowed to ‘float’, or vary, above prime as the prime rate varies until maturity.

Once the nominal (or stated) annual rate is established, the method of computing interest is determined. Interest can be paid either when a loan matures or in advance. If interest is paid at maturity, the effective (or true) annual rate – the actual rate of interest paid – for an assumed 1-year period is equal to:

\[
\text{Effective annual rate} = \frac{\text{Interest}}{\text{Amount borrowed}}
\]

When interest is paid in advance, it is deducted from the loan so that the borrower actually receives less money than is requested (and less than they must repay). Loans on which interest is paid in advance by being deducted from the amount borrowed are called **discount loans**. The effective annual rate for a discount loan, assuming a 1-year period, is calculated as:

\[
\text{Effective annual rate} = \frac{\text{Interest}}{\text{Amount borrowed} - \text{Interest}}
\]

**Example**

Wooster Company, a manufacturer of athletic apparel, wants to borrow R10,000 at a stated annual rate of 10% interest for 1 year. If the interest on the loan is paid at maturity, the organisation will pay R1,000 \((0.10 \times R10,000)\) for the use of the R10,000 for the year. At the end of the year, Wooster will write a check to the lender for R11,000, consisting of the R1,000 interest as well as the return of the R10,000 principal.

The effective annual rate is therefore:
If the money is borrowed at the same stated annual rate for 1 year but interest is paid in advance, the organisation still pays R1,000 in interest, but it receives only R9,000 (R10,000 – R1,000).

The effective annual rate is therefore:

\[ \frac{1,000}{10,000 - 1,000} = \frac{1,000}{9,000} = 11.1\% \]

**A single-payment note** is a short-term, one-time loan made to a borrower who needs funds for a specific purpose for a short period.

- This type of loan is usually a one-time loan made to a borrower who needs funds for a specific purpose for a short period.
- The resulting instrument is a note, signed by the borrower, that states the terms of the loan, including the length of the loan and the interest rate.
- This type of short-term note generally has a maturity of 30 days to 9 months or more.
- The interest charged is usually tied in some way to the prime rate of interest.

**Example**

Gordon Manufacturing, a producer of rotary mower blades, recently borrowed R100,000 from each of two banks – bank A and bank B. The loans were incurred on the same day, when the prime rate of interest was 6%. Each loan involved a 90-day note with interest to be paid at the end of 90 days.

The interest rate was set at 1½% above the prime rate on bank A’s fixed-rate note. Over the 90-day period, the rate of interest on this note will remain at 7½% (6% prime rate + 1½% increment) regardless of fluctuations in the prime rate. The total interest cost on this loan is R1,849 \([R100,000 \times (7\frac{1}{2}\% \times 90/365)]\), which means that the 90-day rate on this loan is 1.85% \((R1,849/R100,000)\).
Because the loan costs 1.85% for 90 days, it is necessary to compound \((1 + 0.0185)\) for 4.06 periods in the year (that is, \(365/90\)) and then subtract 1 to find its effective annual interest rate:

\[
\text{Effective annual rate} = (1 + 0.0185)^{4.06} - 1 = 7.73\%
\]

Bank B set the interest rate at 1% above the prime rate on its floating-rate note. The rate charged over the 90 days will vary directly with the prime rate. Initially, the rate will be 7% (6% + 1%), but when the prime rate changes, so will the rate of interest on the note. For instance, if after 30 days the prime rate rises to 6.5%, and after another 30 days it drops to 6.25%, the organisation will be paying 0.575% for the first 30 days \((7\% \times 30/365)\), 0.616% for the next 30 days \((7.5\% \times 30/365)\), and 0.596% for the last 30 days \((7.25\% \times 30/365)\). Its total interest cost will be \(R1,787\) \([R100,000 \times (0.575\% + 0.616\% + 0.596\%)]\), resulting in a 90-day rate of 1.79% \((R1,787/R100,000)\).

Again, assuming the loan is rolled over each 90 days throughout the year under the same terms and circumstances, its effective annual rate is 7.46%:

\[
\text{Effective annual rate} = (1 + 0.01787)^{4.06} - 1 = 7.46\%
\]

Clearly, in this case the floating-rate loan would have been less expensive than the fixed-rate loan because of its generally lower effective annual rate.

A line of credit is an agreement between a commercial bank and a business specifying the amount of unsecured short-term borrowing the bank will make available to the organisation over a given period of time.

- A line-of-credit agreement is typically made for a period of 1 year and often places certain constraints on the borrower.
- The interest rate on a line of credit is normally stated as a floating rate – the prime rate plus a premium, which depends on the organisation’s creditworthiness.
- A bank may impose operating-change restrictions, which are contractual restrictions that a bank may impose on an organisation’s financial condition or operations as part of a line-of-credit agreement.
- A **compensating balance** is a required checking account balance equal to a certain percentage of the amount borrowed from a bank under a line-of-credit or revolving credit agreement.

**Example**

Estrada Graphics, a graphic design organisation, has borrowed R1 million under a line-of-credit agreement. It must pay a stated interest rate of 10% and maintain, in its checking account, a compensating balance equal to 20% of the amount borrowed, or R200,000. Thus it actually receives the use of only R800,000. To use that amount for a year, the organisation pays interest of R100,000 (0.10 \times R1,000,000). The effective annual rate on the funds is therefore 12.5% (R100,000 \div R800,000), 2.5% more than the stated rate of 10%.

If the organisation normally maintains a balance of R200,000 or more in its checking account, the effective annual rate equals the stated annual rate of 10% because none of the R1 million borrowed is needed to satisfy the compensating-balance requirement. If the organisation normally maintains a R100,000 balance in its checking account, only an additional R100,000 will have to be tied up, leaving it with R900,000 of usable funds. The effective annual rate in this case would be 11.1% (R100,000 \div R900,000). Thus a compensating balance raises the cost of borrowing only if it is larger than the organisation’s normal cash balance.

An **annual clean-up** is the requirement that for a certain number of days during the year borrowers under a line of credit carry a zero loan balance (that is, owe the bank nothing).

- This is to ensure that money lent under a line-of-credit agreement is actually being used to finance seasonal needs.

A **revolving credit agreement** is a line of credit guaranteed to a borrower by a commercial bank regardless of the scarcity of money.
– It is guaranteed in the sense that the commercial bank assures the borrower that a specified amount of funds will be made available regardless of the scarcity of money.

A commitment fee is the fee that is normally charged on a revolving credit agreement.
– This fee often applies to the average unused balance of the borrower’s credit line.
– It is normally about 0.5 percent of the average unused portion of the line.

Example

• REH Company has a R2 million revolving credit agreement with its bank. Its average borrowing under the agreement for the past year was R1.5 million.
• The bank charges a commitment fee of 0.5% on the average unused balance. Because the average unused portion of the committed funds was R500,000 (R2 million − R1.5 million), the commitment fee for the year was R2,500 (0.005 × R500,000).
• REH also had to pay interest on the actual R1.5 million borrowed under the agreement. Assuming that R112,500 interest was paid on the R1.5 million borrowed, the effective cost of the agreement was 7.67% \[
\frac{(R112,500 + R2,500)}{R1,500,000}.
\]

Commercial paper is a form of financing consisting of short-term, unsecured promissory notes issued by organisations with a high credit standing.
– Generally, only large organisations of unquestionable financial soundness are able to issue commercial paper.
– Most commercial paper issues have maturities ranging from 3 to 270 days.
– Although there is no set denomination, such financing is generally issued in multiples of R100,000 or more.
A large portion of the commercial paper today is issued by finance companies; manufacturing organisations account for a smaller portion of this type of financing.

Example

Bertram Corporation, a large shipbuilder, has just issued R1 million worth of commercial paper that has a 90-day maturity and sells for R990,000. At the end of 90 days, the purchaser of this paper will receive R1 million for its R990,000 investment. The interest paid on the financing is therefore R10,000 on a principal of R990,000.

- The effective 90-day rate on the paper is 1.01% (R10,000/R990,000).
- Assuming that the paper is rolled over each 90 days throughout the year (that is, 365/90 = 4.06 times per year), the effective annual rate for Bertram’s commercial paper is 4.16% \((1 + 0.0101)^{4.06} - 1\).

International loans

The important difference between international and domestic transactions is that payments are often made or received in a foreign currency.

- Not only must a SA company pay the costs of doing business in the foreign exchange market, but it also is exposed to exchange rate risk.
- Typical international transactions are large in size and have long maturity dates. Therefore, companies that are involved in international trade generally have to finance larger dollar amounts for longer time periods than companies that operate domestically.
- Furthermore, because foreign companies are rarely well known in the United States, some financial institutions are reluctant to lend to US exporters or importers, particularly smaller organisations.
A **letter of credit** is a letter written by a company’s bank to the company’s foreign supplier, stating that the bank guarantees payment of an invoiced amount if all the underlying agreements are met.

- The letter of credit essentially substitutes the bank’s reputation and creditworthiness for that of its commercial customer.
- An RSA exporter is more willing to sell goods to a foreign buyer if the transaction is covered by a letter of credit issued by a well-known bank in the buyer’s home country.

**Self-assessment exercise**

Find a solution for the following problem in Gitman (2010): P15-10.

### 6.3 Secured sources of short-term loans

*Study Gitman (2010, Chapter 15: Secured sources of short-term loans).*

**Secured short-term financing** is short-term financing (loan) that has specific assets pledged as collateral.

- The collateral commonly takes the form of an asset, such as accounts receivable or inventory.
- Holding collateral can reduce losses if the borrower defaults, but the presence of collateral has no impact on the risk of default.

A **security agreement** is the agreement between the borrower and the lender that specifies the collateral held against a secured loan.

- In addition, the terms of the loan against which the security is held form part of the security agreement.
- A copy of the security agreement is filed in a public office within the state – typically, a county or state court.
Characteristics of secured short-term loans

The percentage advance is the percentage of the book value of the collateral that constitutes the principal of a secured loan.

- Normally between 30 and 100 percent of the book value of the collateral.

Commercial finance companies are lending institutions that make only secured loans – both short-term and long-term – to businesses.

- Unlike banks, finance companies are not permitted to hold deposits.

Use of accounts receivable as collateral

Two commonly used means of obtaining short-term financing with accounts receivable are pledging accounts receivable and factoring accounts receivable.

- A pledge of accounts receivable is the use of an organisation’s accounts receivable as security, or collateral, to obtain a short-term loan.

- Factoring accounts receivable is the outright sale of accounts receivable at a discount to a factor or other financial institution.

- A factor is a financial institution that specialises in purchasing accounts receivable from businesses.

Pledges of accounts receivable are typically made on a non-notification basis, which is the basis on which a borrower, having pledged an account receivable, continues to collect the account payments without notifying the account customer.

The alternative, notification basis, is the basis on which an account customer whose account has been pledged (or factored) is notified to remit payment directly to the lender (or factor).

Factoring is normally done on a notification basis, and the factor receives payment of the account directly from the customer.
In addition, most sales of accounts receivable to a factor are made on a **non-recourse basis**, which is the basis on which accounts receivable are sold to a factor with the understanding that the factor accepts all credit risks on the purchased accounts.

**Use of inventory as collateral**

Inventory is generally second to accounts receivable in desirability as short-term loan collateral.

- The most important characteristic of inventory being evaluated as loan collateral is marketability.
- A warehouse of perishable items, such as fresh peaches, may be quite marketable, but if the cost of storing and selling the peaches is high, they may not be desirable collateral.
- Specialised items, such as moon-roving vehicles, are not desirable collateral either, because finding a buyer for them could be difficult.

A **floating inventory lien** is a secured short-term loan against inventory under which the lender’s claim is on the borrower’s inventory in general.

- This arrangement is most attractive when the organisation has a stable level of inventory that consists of a diversified group of relatively inexpensive merchandise.
- Because it is difficult for a lender to verify the presence of the inventory, the lender generally advances less than 50 percent of the book value of the average inventory.
- The interest charge on a floating lien is 3 to 5 percent above the prime rate.

A **trust receipt inventory loan** is a secured short-term loan against inventory under which the lender advances 80 to 100 percent of the cost of the borrower’s relatively expensive inventory items in exchange for the borrower’s promise to
repay the lender, with accrued interest, immediately after the sale of each item of collateral.

- The borrower is free to sell the merchandise but is trusted to remit the amount lent, along with accrued interest, to the lender immediately after the sale.

A **warehouse receipt loan** is a secured short-term loan against inventory under which the lender receives control of the pledged inventory collateral, which is stored by a designated warehousing company on the lender’s behalf.

- A terminal warehouse is a central warehouse that is used to store the merchandise of various customers.

Under a field warehouse arrangement, the lender hires a field-warehousing company to set up a warehouse on the borrower’s premises or to lease part of the borrower’s warehouse to store the pledged collateral.

**Self-assessment exercise**


**Summary**

Working capital management focuses on managing each of the organisation’s current assets and current liabilities in a manner that positively contributes to the organisation’s value. Net working capital is the difference between current assets and current liabilities. Risk, in the context of short-term financial decisions, is the probability that an organisation will be unable to pay its bills as they come due. Assuming a constant level of total assets, the higher an organisation’s ratio of current assets to total assets, the less profitable the organisation, and the less risky it is. The converse is also true. With constant total assets, the higher an organisation’s ratio of current liabilities to total assets, the more profitable and the more risky the organisation is. The converse of this statement is also true.
The cash conversion cycle has three components: (1) average age of inventory, (2) average collection period, and (3) average payment period. To minimise its reliance on negotiated liabilities, the financial manager seeks to (1) turn over inventory as quickly as possible, (2) collect accounts receivable as quickly as possible, (3) manage mail, processing, and clearing time, and (4) pay accounts payable as slowly as possible. Use of these strategies should minimise the length of the cash conversion cycle.

The viewpoints of marketing, manufacturing, and purchasing managers about the appropriate levels of inventory tend to cause higher inventories than those deemed appropriate by the financial manager. Four commonly used techniques for effectively managing inventory to keep its level low are (1) the ABC system, (2) the economic order quantity (EOQ) model, (3) the just-in-time (JIT) system, and (4) computerised systems for resource control – MRP, MRP II, and ERP. International inventory managers place greater emphasis on making sure that sufficient quantities of inventory are delivered where and when needed, and in the right condition, than on ordering the economically optimal quantities.

Credit selection techniques determine which customers’ creditworthiness is consistent with the organisation’s credit standards. Two popular credit selection techniques are the five C’s of credit and credit scoring. Changes in credit standards can be evaluated mathematically by assessing the effects of a proposed change on profits from sales, the cost of accounts receivable investment, and bad-debt costs.

Changes in credit terms – the cash discount, the cash discount period, and the credit period – can be quantified similarly to changes in credit standards. Credit monitoring, the ongoing review of accounts receivable, frequently involves use of the average collection period and an aging schedule. Organisations use a number of popular collection techniques.
The major spontaneous source of short-term financing is accounts payable. They are the primary source of short-term funds. Credit terms may differ with respect to the credit period, cash discount, cash discount period, and beginning of the credit period. Cash discounts should be given up only when an organisation in need of short-term funds must pay an interest rate on borrowing that is greater than the cost of giving up the cash discount.

Stretching accounts payable can lower the cost of giving up a cash discount. Accruals, which result primarily from wage and tax obligations, are virtually free. Banks are the major source of unsecured short-term loans to businesses. The interest rate on these loans is tied to the prime rate of interest by a risk premium and may be fixed or floating. It should be evaluated by using the effective annual rate. Whether the interest is paid when the loan matures or in advance it affects the rate. Bank loans may take the form of a single-payment note, a line of credit, or a revolving credit agreement.

Secured short-term loans are those for which the lender requires collateral – typically, current assets such as accounts receivable or inventory. Only a percentage of the book value of acceptable collateral is advanced by the lender. These loans are more expensive than unsecured loans. Commercial banks and commercial finance companies make secured short-term loans. Both pledging and factoring involve the use of accounts receivable to obtain needed short-term funds.

Bibliography


Annexure
Suggested solutions

E1-4. Agency costs

Answer: Agency costs are the costs borne by shareholders to maintain a governance structure that ensures against dishonest acts of management and gives managers the financial incentive to maximise share price. One example of agency costs is share options, which are used to provide an incentive for managers to work diligently for the benefit of the organisation. Tips are similar to share options in that they are offered as rewards for good service much as share options are used to reward managers, presumably based on their good performance – which subsequently leads to a higher share price. The Donut Shop, Inc. example does not represent a clear case of agency costs because it is the management itself that has instituted the ‘no-tips’ policy and the employees have responded with reduced performance. By banning tips, the management has created a situation where an agency cost may be necessary to provide an incentive for employees to resume their former level of performance.
P1-2. Marginal cost-benefit analysis and the goal of the organisation

a. Benefits from new robotics  R560,000
   Benefits from existing robotics  400,000
   Marginal benefits  R160,000

b. Initial cash investment  R220,000
   Receipt from sale of old robotics  70,000
   Marginal cost  R150,000

c. Marginal benefits  R160,000
   Marginal cost  150,000
   Net benefits  R10,000

d. Ken should recommend that the company replace the old robotics with the new robotics.
   The net benefit to shareholders is positive which should make the shareholders better off.

e. Ken should consider more than just net benefits. He should incorporate the important points of timing, cash flow, and risk, three important factors in determining the true impact on shareholders' wealth.

P1-3. Annual income versus cash flow for a period

a. Income  R760,000
   Cost of sales  300,000
   Net profit  R460,000

b. Cash receipts  R690,000
   Cost of goods sold  300,000
   Net cash flow  R390,000

c. The cash flow statement is more useful to the financial manager. The accounting net income includes amounts that will not be collected and, as a result, do not contribute to the wealth of the owners.
P1-5. Identifying agency problems, costs, and resolutions

a. In this case the employee is being compensated for unproductive time. The company must pay someone to take her place during her absence. Installation of a time clock that must be punched by the receptionist every time she leaves work and returns would result in either:
(1) her returning on time or (2) reducing the cost to the organisation by reducing her pay for the lost work.

b. The costs to the organisation are in the form of opportunity costs. Money budgeted to cover the inflated costs of this project proposal is not available to fund other projects that may help to increase shareholder wealth. Make the management reward system based on how close the manager’s estimates come to the actual cost rather than having them come in below cost.

c. The manager may negotiate a deal with the merging competitor that is extremely beneficial to the executive and then sell the organisation for less than its fair market value. A good way to reduce the loss of shareholder wealth would be to open the organisation up for purchase bids from other organisations once the manager makes it known that the organisation is willing to merge. If the price offered by the competitor is too low, other organisations will up the price closer to its fair market value.
P1-7. Average corporate tax rates

a.

**R10,000:**
Tax liability: $10,000 \times 0.0 = R0$
After-tax earnings: $10,000 - R0 = R10,000$

**R80,000:**
Tax liability: $80,000 - R43,000 = R37,000$
$R37,000 \times 10\% = R3,700$
$= \text{Total tax}$
After-tax earnings: $80,000 - R3,700 = R76,300$

**R500,000:**
Tax liability: $25,700 + \left[0.29 \times (R500,000 - R300,000)\right] + \left[0.34 \times (R500,000 - R335,000)\right]$
$R25,700 + (0.29 \times R200,000)$
$R25,700 + R58,000 + R56,100$
$R83,700 = \text{Total tax}$
After-tax earnings: $R500,000 - R83,700 = R416,300$
Chapter 2

P2-13. Liquidity management

a.

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current ratio</td>
<td>1.88</td>
<td>1.74</td>
<td>1.79</td>
<td>1.55</td>
</tr>
<tr>
<td>Quick ratio</td>
<td>1.22</td>
<td>1.19</td>
<td>1.24</td>
<td>1.14</td>
</tr>
<tr>
<td>Net working capital</td>
<td>R7,950</td>
<td>R9,300</td>
<td>R9,900</td>
<td>R9,600</td>
</tr>
</tbody>
</table>

b. The pattern indicates a deteriorating liquidity position. The decline is most pronounced for the current ratio that includes inventory.

c. The low inventory turnover suggests that liquidity is even worse than the declining liquidity measures indicate. Slow inventory turnover may indicate obsolete inventory.

P2-17. Interpreting liquidity and activity ratios

a. Bluegrass appears to be holding excess inventory relative to the industry. This fact is supported by the low inventory turnover and the low quick ratio, even though the current ratio is above the industry average. This excess inventory could be due to slow sales relative to production or possibly from carrying obsolete inventory.

b. The trade receivables of Bluegrass appear to be high due to the large number of days of sales issued (73 versus the industry average of 52 days). An important question for internal management is whether the company’s credit policy is too lenient or customers are just paying slowly – or potentially not paying at all.

c. Since the organisation is paying its trade and other payables in 31 days versus the industry norm of 40 days, Bluegrass may not be taking full advantage of credit terms extended to it by its suppliers. By having the receivables collection period over twice as long as the payables payment period, the organisation is financing a significant amount of current assets, possibly from long-term sources.
d. The desire is that management will be able to curtail the level of inventory either by reducing production or encouraging additional sales through a stronger sales programme or discounts. If the inventory is obsolete, then it must be written off to gain the income tax benefit. The organisation must also push to try to get its customers to pay earlier. Payment timing can be increased by shortening credit terms or providing a discount for earlier payment. Slowing down the payment of trade and other payables would also reduce financing costs.

Carrying out these recommendations may be difficult because of the potential loss of customers due to stricter credit terms. The organisation would also not want to increase its costs of purchases by delaying payment beyond any discount period given by its suppliers.

P2-18. Debt analysis

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Definition</th>
<th>Calculation</th>
<th>Bushbuck</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt</td>
<td>Debt/R50,000,000</td>
<td>R36,500,000</td>
<td>0.73</td>
<td>0.51</td>
</tr>
<tr>
<td></td>
<td>Total assets</td>
<td>R50,000,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Times</td>
<td>EBIT/R1,000,000</td>
<td>R3,000,000</td>
<td>3.00</td>
<td>7.30</td>
</tr>
<tr>
<td>interest</td>
<td>Interest</td>
<td>R1,000,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>earned</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Because Bushbuck Enterprises has a much higher degree of indebtedness and much lower ability to service debt than the average organisation in the industry, the loan should be rejected.
P2-20. The relationship between financial leverage and profitability

a. (1) Debt ratio = \( \frac{\text{total liabilities}}{\text{total assets}} \)

Debt ratio\textsubscript{Pelican} = \( \frac{\text{R1,000,000}}{\text{R10,000,000}} \) = 0.10 = 10%

Debt ratio\textsubscript{Timberland} = \( \frac{\text{R5,000,000}}{\text{R10,000,000}} \) = 0.50 = 50%

(2) Times interest earned = \( \frac{\text{earning before interest and taxes}}{\text{interest}} \)

Times interest earned\textsubscript{Pelican} = \( \frac{\text{R6,250,000}}{\text{R100,000}} \) = 62.5

Times interest earned\textsubscript{Timberland} = \( \frac{\text{R6,250,000}}{\text{R500,000}} \) = 12.5

Timberland has a much higher degree of financial leverage than Pelican does. As a result Timberland’s earnings will be more volatile, causing the ordinary share owners to face greater risk. This additional risk is supported by the significantly lower times interest earned ratio of Timberland. Pelican can face a very large reduction in net income and still be able to cover its interest expense.

b. (1) Operating profit margin = \( \frac{\text{operating profit}}{\text{sales}} \)

Operating profit margin\textsubscript{Pelican} = \( \frac{\text{R6,250,000}}{\text{R25,000,000}} \) = 0.25 = 25%

Operating profit margin\textsubscript{Timberland} = \( \frac{\text{R6,250,000}}{\text{R25,000,000}} \) = 0.25 = 25%

(2)

\textbf{Net profit margin} = \( \frac{\text{Earnings available for ordinary shareholders}}{\text{sales}} \)

Net profit margin\textsubscript{Pelican} = \( \frac{\text{R3,690,000}}{\text{R25,000,000}} \) = 0.1476 = 14.76%

Net profit margin\textsubscript{Timberland} = \( \frac{\text{R3,450,000}}{\text{R25,000,000}} \) = 0.138 = 13.80%
Pelican is more profitable than Timberland, as shown by the higher operating profit margin, net profit margin, and return on assets. However, the return on equity for Timberland is higher than that of Pelican.

c. Even though Pelican is more profitable, Timberland has a higher ROE than Pelican due to the additional financial leverage risk. The lower profits of Timberland are due to the fact that interest expense is deducted from EBIT. Timberland has R500,000 of interest expense to Pelican’s R100,000. Even after the tax shield from the interest tax deduction (R500,000 × 0.40 = R200,000) Timberland’s profits are less than Pelican’s by R240,000. Since Timberland has a higher relative amount of debt, the shareholders’ equity is proportionally reduced, resulting in the higher return to equity than that obtained by Pelican. The higher ROE brings with it higher levels of financial risk for Timberland equity holders.
### P2-24. Integrative – complete ratio analysis

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current ratio</td>
<td>1.40</td>
<td>1.55</td>
<td>1.67</td>
<td>1.85</td>
<td>TS:</td>
<td>Improving</td>
<td>CS:</td>
<td>Fair</td>
</tr>
<tr>
<td>Quick ratio</td>
<td>1.00</td>
<td>0.92</td>
<td>0.88</td>
<td>1.05</td>
<td>TS:</td>
<td>Deteriorating</td>
<td>CS:</td>
<td>Poor</td>
</tr>
<tr>
<td>Inventory turnover</td>
<td>9.52</td>
<td>9.21</td>
<td>7.89</td>
<td>8.60</td>
<td>TS:</td>
<td>Deteriorating</td>
<td>CS:</td>
<td>Fair</td>
</tr>
<tr>
<td>Average collection period</td>
<td>45.6 days</td>
<td>36.9 days</td>
<td>29.2 days</td>
<td>35.5 days</td>
<td>TS:</td>
<td>Good</td>
<td>CS:</td>
<td>Poor</td>
</tr>
<tr>
<td>Average payment period</td>
<td>59.3 days</td>
<td>61.6 days</td>
<td>53.0 days</td>
<td>46.4 days</td>
<td>TS:</td>
<td>Good</td>
<td>CS:</td>
<td>Increasing</td>
</tr>
<tr>
<td>Total asset turnover</td>
<td>65.00</td>
<td>78.00</td>
<td>83.00</td>
<td>74.00</td>
<td>CS:</td>
<td>Good</td>
<td>CS:</td>
<td>Fair</td>
</tr>
<tr>
<td>Debt ratio</td>
<td>0.20</td>
<td>0.20</td>
<td>0.35</td>
<td>0.30</td>
<td>TS:</td>
<td>Unstable</td>
<td>CS:</td>
<td>Poor</td>
</tr>
<tr>
<td>Times interest earned</td>
<td>8.2</td>
<td>7.3</td>
<td>6.5</td>
<td>8.0</td>
<td>CS:</td>
<td>Poor</td>
<td>CS:</td>
<td>Improving</td>
</tr>
<tr>
<td>Gross profit margin</td>
<td>0.30</td>
<td>0.27</td>
<td>0.25</td>
<td>0.25</td>
<td>TS:</td>
<td>Deteriorating</td>
<td>CS:</td>
<td>Average</td>
</tr>
<tr>
<td>Operating profit margin</td>
<td>0.12</td>
<td>0.12</td>
<td>0.13</td>
<td>0.10</td>
<td>TS:</td>
<td>Good</td>
<td>CS:</td>
<td>Stable</td>
</tr>
<tr>
<td>Net profit margin</td>
<td>0.062</td>
<td>0.062</td>
<td>0.061</td>
<td>0.053</td>
<td>TS:</td>
<td>Good</td>
<td>CS:</td>
<td>Good</td>
</tr>
<tr>
<td>Return on total assets</td>
<td>0.045</td>
<td>0.050</td>
<td>0.051</td>
<td>0.040</td>
<td>TS:</td>
<td>Improving</td>
<td>CS:</td>
<td>Good</td>
</tr>
<tr>
<td>Return on ordinary equity</td>
<td>0.061</td>
<td>0.067</td>
<td>0.090</td>
<td>0.066</td>
<td>TS:</td>
<td>Good</td>
<td>CS:</td>
<td>Good</td>
</tr>
<tr>
<td>Earnings per share (EPS)</td>
<td>R1.75</td>
<td>R2.20</td>
<td>R3.05</td>
<td>R1.50</td>
<td>TS:</td>
<td>Unstable</td>
<td>CS:</td>
<td>Good</td>
</tr>
<tr>
<td>Price/earnings (P/E)</td>
<td>12.0</td>
<td>10.5</td>
<td>13.0</td>
<td>11.2</td>
<td>TS:</td>
<td>Improving</td>
<td>CS:</td>
<td>Good</td>
</tr>
<tr>
<td>Market/book ratio (M/B)</td>
<td>1.20</td>
<td>1.05</td>
<td>1.01</td>
<td>1.10</td>
<td>TS:</td>
<td>Deteriorating</td>
<td>CS:</td>
<td>Fair</td>
</tr>
</tbody>
</table>

**Liquidity:** Sterling Company’s overall liquidity as reflected by the current ratio and quick ratio appears to be following different trends, but is below the industry average.

**Activity:** The activity of trade receivables has improved, but inventory turnover has deteriorated and is currently below the industry average. The organisation’s average payment period appears to have speeded up from 2007, although the organisation is still paying more slowly than the average company.
**Debt:** The organisation’s debt ratios have increased from 2007 and are very close to the industry averages, indicating currently acceptable values but an undesirable trend.

**Profitability:** The organisation’s gross profit margin, while in line with the industry average, has declined, probably due to higher cost of goods sold. The operating and net profit margins have been stable and are also above industry averages. Both the ROA and the ROE appear to have improved slightly and are better than the industry averages. EPS made a significant increase in 2008 and 2009. The P/E ratio indicates an increasing degree of investor confidence in the organisation’s future earnings potential.

**Market:** The organisation’s P/E ratio was good in 2007, fell significantly in 2008 but recovered in 2009. The ratio is now above the industry average. The market to book ratio initially showed signs of weakness in 2008 and 2009. The market’s interpretation of Sterling’s earning ability indicates a lot of uncertainty. The fluctuation in the M/B ratio also shows signs of uncertainty.

In summary, the organisation needs to attend to inventory and trade and other payables and should not incur added debts until its leverage and fixed-charge coverage ratios are improved. Other than these indicators, the organisation appears to be doing well – especially in generating return on sales. The market seems to have some lack of confidence in the stability of Sterling’s future.
P2-25. DuPont system of analysis

a.

<table>
<thead>
<tr>
<th></th>
<th>Margin (%)</th>
<th>× Turnover</th>
<th>= ROA (%)</th>
<th>× FL Multiple</th>
<th>= ROE (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Johnson</td>
<td>4.9</td>
<td>× 2.34</td>
<td>= 11.47</td>
<td>× 1.85</td>
<td>= 21.21</td>
</tr>
<tr>
<td>Industry</td>
<td>4.1</td>
<td>× 2.15</td>
<td>= 8.82</td>
<td>× 1.64</td>
<td>= 14.46</td>
</tr>
<tr>
<td>2008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Johnson</td>
<td>5.8</td>
<td>× 2.18</td>
<td>= 12.64</td>
<td>× 1.75</td>
<td>= 22.13</td>
</tr>
<tr>
<td>Industry</td>
<td>4.7</td>
<td>× 2.13</td>
<td>= 10.01</td>
<td>× 1.69</td>
<td>= 16.92</td>
</tr>
<tr>
<td>2007</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Johnson</td>
<td>5.9</td>
<td>× 2.11</td>
<td>= 12.45</td>
<td>× 1.75</td>
<td>= 21.79</td>
</tr>
<tr>
<td>Industry</td>
<td>5.4</td>
<td>× 2.05</td>
<td>= 11.07</td>
<td>× 1.67</td>
<td>= 18.49</td>
</tr>
</tbody>
</table>

b. **Profitability**: Industry’s net profit margins are decreasing; Johnson’s net profit margins have fallen less.

**Efficiency**: Both industry’s and Johnson’s asset turnover have increased.

**Leverage**: Only Johnson shows an increase in leverage from 2008 to 2009, while the industry has had less stability. Between 2007 and 2008, leverage for the industry increased, while it decreased between 2008 and 2009.

As a result of these changes, the ROE has fallen for both Johnson and the industry, but Johnson has experienced a much smaller decline in its ROE.

c. Areas that require further analysis are profitability and debt. Since the total asset turnover is increasing and is superior to that of the industry, Johnson is generating an appropriate sales level for the given level of assets. But why is the net profit margin falling for both industry and Johnson? Has there been increased competition causing downward pressure on prices? Is the cost of raw materials, labour or other expenses rising? An ordinary-size statement of comprehensive income could be useful in determining the cause of the falling net profit margin.
Note: Some management teams attempt to magnify returns through the use of leverage to offset declining margins. This strategy is effective only within a narrow range. A high leverage strategy may actually result in a decline in share price due to the increased risk.

**P2-26. LG 6: Complete ratio analysis, recognising significant differences**

### a.

<table>
<thead>
<tr>
<th>Ratio</th>
<th>2008</th>
<th>2009</th>
<th>Difference</th>
<th>Proportional difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current ratio</td>
<td>3.25</td>
<td>3.00</td>
<td>– 0.25</td>
<td>– 7.69%</td>
</tr>
<tr>
<td>Quick ratio</td>
<td>2.50</td>
<td>2.20</td>
<td>– 0.30</td>
<td>– 12.00%</td>
</tr>
<tr>
<td>Inventory turnover</td>
<td>12.80</td>
<td>10.30</td>
<td>– 2.50</td>
<td>– 19.53%</td>
</tr>
<tr>
<td>Average collection period</td>
<td>42.6 days</td>
<td>31.4 days</td>
<td>– 11.2 days</td>
<td>– 26.29%</td>
</tr>
<tr>
<td>Total asset turnover</td>
<td>1.40</td>
<td>2.00</td>
<td>0.60</td>
<td>42.86%</td>
</tr>
<tr>
<td>Debt ratio</td>
<td>0.45</td>
<td>0.62</td>
<td>0.17</td>
<td>37.78%</td>
</tr>
<tr>
<td>Times interest earned</td>
<td>4.00</td>
<td>3.85</td>
<td>– 0.15</td>
<td>– 3.75%</td>
</tr>
<tr>
<td>Gross profit margin</td>
<td>68%</td>
<td>65%</td>
<td>– 3%</td>
<td>– 4.41%</td>
</tr>
<tr>
<td>Operating profit margin</td>
<td>14%</td>
<td>16%</td>
<td>+ 2%</td>
<td>14.29%</td>
</tr>
<tr>
<td>Net profit margin</td>
<td>8.3%</td>
<td>8.1%</td>
<td>– 0.2%</td>
<td>– 2.41%</td>
</tr>
<tr>
<td>Return on total assets</td>
<td>11.6%</td>
<td>16.2%</td>
<td>4.6%</td>
<td>39.65%</td>
</tr>
<tr>
<td>Return on ordinary equity</td>
<td>21.1%</td>
<td>42.6%</td>
<td>21.5%</td>
<td>101.90%</td>
</tr>
<tr>
<td>Price/earnings ratio</td>
<td>10.7</td>
<td>9.8</td>
<td>– 0.9</td>
<td>– 8.41%</td>
</tr>
<tr>
<td>Market/book ratio</td>
<td>1.40</td>
<td>1.25</td>
<td>– 0.15</td>
<td>– 10.71%</td>
</tr>
</tbody>
</table>

### b.

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Proportional difference</th>
<th>Company's favour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick ratio</td>
<td>– 12.00%</td>
<td>No</td>
</tr>
<tr>
<td>Inventory turnover</td>
<td>– 19.53%</td>
<td>No</td>
</tr>
<tr>
<td>Average collection period</td>
<td>– 26.29%</td>
<td>Yes</td>
</tr>
<tr>
<td>Total asset turnover</td>
<td>42.86%</td>
<td>Yes</td>
</tr>
<tr>
<td>Debt ratio</td>
<td>37.78%</td>
<td>No</td>
</tr>
<tr>
<td>Operating profit margin</td>
<td>14.29%</td>
<td>Yes</td>
</tr>
<tr>
<td>Return on total assets</td>
<td>39.65%</td>
<td>Yes</td>
</tr>
<tr>
<td>Return on equity</td>
<td>101.90%</td>
<td>Yes</td>
</tr>
<tr>
<td>Market/book ratio</td>
<td>– 10.71%</td>
<td>No</td>
</tr>
</tbody>
</table>
c. The most obvious relationship is associated with the increase in the ROE value. The increase in this ratio is connected with the increase in the ROA. The higher ROA is partially attributed to the higher total asset turnover (as reflected in the DuPont model). The ROE increase is also associated with the slightly higher level of debt as captured by the higher debt ratio.
Chapter 3

P3-5.  Classifying inflows and outflows of cash

<table>
<thead>
<tr>
<th>Item</th>
<th>Change (R)</th>
<th>I/O</th>
<th>Item</th>
<th>Change (R)</th>
<th>I/O</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>+100</td>
<td>O</td>
<td>Trade receivable</td>
<td>−700</td>
<td>I</td>
</tr>
<tr>
<td>Trade payable</td>
<td>−1,000</td>
<td>O</td>
<td>Net profits</td>
<td>+600</td>
<td>I</td>
</tr>
<tr>
<td>Short-term borrowings</td>
<td>+500</td>
<td>I</td>
<td>Depreciation</td>
<td>+100</td>
<td>I</td>
</tr>
<tr>
<td>Long-term debt</td>
<td>−2,000</td>
<td>O</td>
<td>Repurchase of shares</td>
<td>+600</td>
<td>O</td>
</tr>
<tr>
<td>Inventory</td>
<td>+200</td>
<td>O</td>
<td>Cash dividends</td>
<td>+800</td>
<td>O</td>
</tr>
<tr>
<td>Non-current assets</td>
<td>+400</td>
<td>O</td>
<td>Sale of shares</td>
<td>+1,000</td>
<td>I</td>
</tr>
</tbody>
</table>

P3-6.  Finding operating and free cash flows

a.  Cash flow from operations = net profits after taxes + depreciation
    Cash flow from operations = R1,400 + 1,600
    Cash flow from operations = R3,000

b.  NOPAT = EBIT × (1 − t)
    NOPAT = R2,700 × (1 − 0.30) = R1,890

c.  OCF = NOPAT + depreciation
    OCF = R1890 + R1,600
    OCF = R3,490

d.  FCF = OCF − net non-current asset investment* − net current asset investment**
    FCF = R3,490 − R1,400 − R1,400
    FCF = R420

  * Net non-current asset investment = change in net non-current assets + depreciation
    Net non-current asset investment = (R14,800 − R15,000) + (R14,700 − R13,100)
    Net non-current asset investment = −R200 + R1,600 = R1,400
  ** Net current asset investment = change in current assets − change in trade and other payables and accruals
    Net current asset investment = (R8,200 − R6,800) − (R100 − R100)
    Net current asset investment = R1,400 − 0 = R1,400

e.  Keith Corporation has positive cash flows from operating activities. The accounting cash flows are a little less than the operating and free cash flows (FCF). The FCF value is very meaningful since it shows that the cash flows from operations are adequate to cover both operating expense plus investment in non-current and current assets.
P3-11. Cash budget – advanced

a.  

<table>
<thead>
<tr>
<th>Soshanguve, Ltd (R000)</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forecast sales</td>
<td>R210</td>
<td>R250</td>
<td>R170</td>
<td>R160</td>
<td>R140</td>
<td>R180</td>
<td>R200</td>
<td>R250</td>
</tr>
<tr>
<td>Cash sales (0.20)</td>
<td>R34</td>
<td>R32</td>
<td>R28</td>
<td>R36</td>
<td>R40</td>
<td>R50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collections</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lag 1 month (0.40)</td>
<td>100</td>
<td>68</td>
<td>64</td>
<td>56</td>
<td>72</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lag 2 months (0.40)</td>
<td>84</td>
<td>100</td>
<td>68</td>
<td>64</td>
<td>56</td>
<td>72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other cash receipts</td>
<td></td>
<td>15</td>
<td>27</td>
<td>15</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total cash receipts</td>
<td>R218</td>
<td>R200</td>
<td>R175</td>
<td>R183</td>
<td>R183</td>
<td>R214</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forecast purchases</td>
<td>R120</td>
<td>R150</td>
<td>R140</td>
<td>R100</td>
<td>R 80</td>
<td>R110</td>
<td>R100</td>
<td>R 90</td>
</tr>
<tr>
<td>Cash purchases</td>
<td>R 14</td>
<td>R 10</td>
<td>R 8</td>
<td>R 11</td>
<td>R 10</td>
<td>R 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Payments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lag 1 month (0.50)</td>
<td>75</td>
<td>70</td>
<td>50</td>
<td>40</td>
<td>55</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lag 2 months (0.40)</td>
<td>48</td>
<td>60</td>
<td>56</td>
<td>40</td>
<td>32</td>
<td>44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salaries &amp; wages</td>
<td>50</td>
<td>34</td>
<td>32</td>
<td>28</td>
<td>36</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rent</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest payments</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principal payments</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dividends</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taxes</td>
<td>80</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchases of non-current assets</td>
<td></td>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total cash disbursements</td>
<td>R207</td>
<td>R219</td>
<td>R196</td>
<td>R139</td>
<td>R153</td>
<td>R303</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total cash receipts</td>
<td>R218</td>
<td>R200</td>
<td>R175</td>
<td>R183</td>
<td>R183</td>
<td>R214</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less: Total cash disbursements</td>
<td>207</td>
<td>219</td>
<td>196</td>
<td>139</td>
<td>153</td>
<td>303</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net cash flow</td>
<td>11</td>
<td>(19)</td>
<td>(21)</td>
<td>44</td>
<td>30</td>
<td>(89)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Add: Beginning cash</td>
<td>22</td>
<td>33</td>
<td>14</td>
<td>(7)</td>
<td>37</td>
<td>67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ending cash</td>
<td>33</td>
<td>14</td>
<td>(7)</td>
<td>37</td>
<td>67</td>
<td>(22)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less: Minimum cash balance</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Required total financing (short-term borrowings)</td>
<td>1</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excess cash balance (marketable securities)</td>
<td>18</td>
<td>22</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

c. The line of credit should be at least R37,000 to cover the maximum borrowing needs for the month of April.
P3-19. Integrative – pro forma statements

a. 

**Pro forma statement of comprehensive income**

Red Queen Restaurants
for the year ended December 31, 2011
(percent-of-sales method)

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>R900,000</td>
</tr>
<tr>
<td>Less: Cost of sales (0.75 × sales)</td>
<td>675,000</td>
</tr>
<tr>
<td>Gross profits</td>
<td>R225,000</td>
</tr>
<tr>
<td>Less: Operating expenses (0.125 × sales)</td>
<td>112,500</td>
</tr>
<tr>
<td>Net profits before taxes</td>
<td>R112,500</td>
</tr>
<tr>
<td>Less: Taxes (0.30 × NPBT)</td>
<td>33,750</td>
</tr>
<tr>
<td>Net profits after taxes</td>
<td>R 78,750</td>
</tr>
<tr>
<td>Less: Cash dividends</td>
<td>30,000</td>
</tr>
<tr>
<td>To retained earnings</td>
<td>R 48,750</td>
</tr>
</tbody>
</table>

b. 

**Pro forma statement of financial position**

Red Queen Restaurants
December 31, 2011
(judgemental method)

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities and Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>Trade and other payables</td>
</tr>
<tr>
<td>Marketable securities</td>
<td>Taxes payable</td>
</tr>
<tr>
<td>Trade receivables</td>
<td>Other current liabilities</td>
</tr>
<tr>
<td>Inventories</td>
<td>Current liabilities</td>
</tr>
<tr>
<td>Current assets</td>
<td>Long-term debt</td>
</tr>
<tr>
<td>Net non-current assets</td>
<td>Ordinary shares</td>
</tr>
<tr>
<td></td>
<td>Retained earnings</td>
</tr>
<tr>
<td></td>
<td>External funds required</td>
</tr>
<tr>
<td></td>
<td>Total liabilities and shareholders’ equity</td>
</tr>
<tr>
<td>Total assets</td>
<td>R702,500</td>
</tr>
</tbody>
</table>

*Beginning retained earnings (January 1, 2011) R175,000
Plus: Net profit after taxes 78,750
Less: Dividends paid (30,000)
Ending retained earnings (December 31, 2010) R223,750

\[ (5,000) \]

*Beginning retained earnings (January 1, 2011) R175,000
Plus: Net profit after taxes 78,750
Less: Dividends paid (30,000)
Ending retained earnings (December 31, 2010) R223,750

\[ (5,000) \]


c. Using the judgmental approach, there is a surplus of R5,000.
Chapter 4: Time value of money

P4-18. Future value of an annuity

a. Future value of an ordinary annuity vs. annuity due

(1) Ordinary Annuity

\[ FVA_{k,n} = PMT \times (FVIFA_{k,n}) \]

\[ PMT \times [(FVIFA_{k,n} \times (1 + k)) ] \]

A

- \( FVA_{8\%,10} = R2,500 \times 14.487 \)
- \( FVA_{8\%,10} = R2,500 \times (14.487 \times 1.08) \)
- \( FVA_{8\%,10} = R36,217.50 \)
- Calculator solution: R36,216.41

B

- \( FVA_{12\%,6} = R500 \times 8.115 \)
- \( FVA_{12\%,6} = R500 \times (8.115 \times 1.12) \)
- \( FVA_{12\%,6} = R4,057.50 \)
- Calculator solution: R4,057.59

C

- \( FVA_{20\%,5} = R30,000 \times 7.442 \)
- \( FVA_{20\%,5} = R30,000 \times (7.442 \times 1.20) \)
- \( FVA_{20\%,5} = R223,260 \)
- Calculator solution: R223,248

D

- \( FVA_{9\%,8} = R11,500 \times 11.028 \)
- \( FVA_{9\%,8} = R11,500 \times (11.028 \times 1.09) \)
- \( FVA_{9\%,8} = R126,822 \)
- Calculator solution: R126,827.45

E

- \( FVA_{14\%,30} = R6,000 \times 356.787 \)
- \( FVA_{14\%,30} = R6,000 \times (356.787 \times 1.14) \)
- \( FVA_{14\%,30} = R2,140,722 \)
- Calculator solution: R2,140,721.08

(2) Annuity Due

\[ FVA_{due} = PMT \times (FVIFA_{k,n} \times (1 + k)) \]

A

- \( FVA_{due} = R39,114.90 \)

B

- \( FVA_{due} = R4,544.40 \)

C

- \( FVA_{due} = R267,912 \)

D

- \( FVA_{due} = R2,440,422.00 \)

b. The annuity due results in a greater future value in each case. By depositing the payment at the beginning rather than at the end of the year, it has one additional year of compounding.
P4-19. Present value of an annuity: \( PV_n = \text{PMT} \times (PVIFA_{i\%,n}) \)

a. Present value of an ordinary annuity vs. annuity due

(1) Ordinary Annuity

\[
PVA_{i\%,n} = \text{PMT} \times (PVIFA_{i\%,n})
\]

\[
\text{PMT} \times [(PVIFA_{i\%,n}) \times (1 + k)]
\]

A

\[
PVA_{7\%,3} = R12,000 \times 2.624
\]

R12,000 \times (2.624 \times 1.07)

PVA_{7\%,3} = R31,488

Calculator solution: R31,491.79

B

\[
PVA_{12\%,15} = R55,000 \times 6.811
\]

R55,000 \times (6.811 \times 1.12)

PVA_{12\%,15} = R374,605

Calculator solution: R374,597.55

C

\[
PVA_{20\%,9} = R700 \times 4.031
\]

R700 \times (4.031 \times 1.20)

PVA_{20\%,9} = R2,821.70

Calculator solution: R2,821.68

D

\[
PVA_{5\%,7} = R2,500 \times 3.791
\]

R2,500 \times (2.791 \times 1.10)

PVA_{5\%,7} = R85,297.50

Calculator solution: R85,292.70

E

\[
PVA_{10\%,5} = R22,500 \times 3.791
\]

R22,500 \times (2.791 \times 1.10)

PVA_{10\%,5} = R85,297.50

Calculator solution: R85,292.70

b. The annuity due results in a greater present value in each case. By depositing the payment at the beginning rather than at the end of the year, it has one less year to discount back.

P4-35. Compounding frequency, time value, and effective annual rates

a. Compounding frequency: \( FV_n = PV \times FVIF_{i\%,n} \)

A

\[
FV_5 = R2,500 \times (FVIF_{3\%,10})
\]

R50,000 \times (FVIF_{2\%,18})

\[
FV_5 = R2,500 \times (1.344)
\]

R50,000 \times (1.428)

\[
FV_5 = R3,360
\]

Calculator solution: R3,359.79

B

\[
FV_3 = =
\]

\[
FV_3 = =
\]

R71,400

Calculator solution: R71,412.31
C \[ FV_{10} = R1,000 \times (FVIF_{5\%,10}) \]
\[ R20,000 \times (FVIF_{4\%,24}) \]
\[ FV_{10} = R1,000 \times (1.629) \]
\[ R20,000 \times (2.563) \]
\[ FV_{10} = R16,290 \]
Calculator solution: R1,628.89
R51,266.08

D \[ FV_6 = \]
\[ FV_6 = \]

Effective interest rate: \[ i_{eff} = (1 + i\%/m)^m - 1 \]
A \[ i_{eff} = (1 + 0.06/2)^2 - 1 \]
\[ i_{eff} = (1 + 0.03)^3 - 1 \]
\[ i_{eff} = (1.061) - 1 \]
\[ i_{eff} = 0.061 = 6.1\% \]
B \[ i_{eff} = (1 + 0.12/6)^6 - 1 \]
\[ i_{eff} = (1 + 0.02)^6 - 1 \]
\[ i_{eff} = (1.126) - 1 \]
\[ i_{eff} = 0.126 = 12.6\% \]
C \[ i_{eff} = (1 + 0.05/1)^1 - 1 \]
\[ i_{eff} = (1 + 0.05)^1 - 1 \]
\[ i_{eff} = (1.05) - 1 \]
\[ i_{eff} = 0.05 = 5\% \]
D \[ i_{eff} = (1 + 0.16/4)^4 - 1 \]
\[ i_{eff} = (1 + 0.04)^4 - 1 \]
\[ i_{eff} = (1.170) - 1 \]
\[ i_{eff} = 0.17 = 17\% \]

c. The effective rates of interest rise relative to the stated nominal rate with increasing compounding frequency.

P4-40. Deposits to accumulate growing future sum: \[ PMT = \frac{FVA_n}{FVIFA_{i\%,n}} \]

<table>
<thead>
<tr>
<th>Case</th>
<th>Terms</th>
<th>Calculation</th>
<th>Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>12%, 3 yrs.</td>
<td>( PMT = \frac{R5,000}{3.374} )</td>
<td>R1,481.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calculator solution:</td>
<td>R1,481.74</td>
</tr>
<tr>
<td>B</td>
<td>7%, 20 yrs.</td>
<td>( PMT = \frac{R100,000}{40.995} )</td>
<td>R2,439.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calculator solution:</td>
<td>R2,439.29</td>
</tr>
<tr>
<td>C</td>
<td>10%, 8 yrs.</td>
<td>( PMT = \frac{R30,000}{11.436} )</td>
<td>R2,623.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calculator solution:</td>
<td>R2,623.32</td>
</tr>
<tr>
<td>D</td>
<td>8%, 12 yrs.</td>
<td>( PMT = \frac{R15,000}{18.977} )</td>
<td>R790.43</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>790.43</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calculator solution:</td>
<td>R790.43</td>
</tr>
</tbody>
</table>
P4-49. Growth rates

a. \( PV = FV_n \times PVIF_{i,n} \)

Case

<table>
<thead>
<tr>
<th>A</th>
<th>( PV = FV_a \times PVIF_{k,4\text{yrs.}} )</th>
<th>B</th>
<th>( PV = )</th>
</tr>
</thead>
<tbody>
<tr>
<td>R500 = R800 \times PVIF_{k,4\text{yrs.}}</td>
<td>R2,280 \times PVIF_{k,9\text{yrs.}}</td>
<td>0.625 = PVIF_{k,4\text{yrs.}}</td>
<td>0.658 = PVIF_{k,9\text{yrs.}}</td>
</tr>
<tr>
<td>12% &lt; k &lt; 13%</td>
<td>4% &lt; k &lt; 5%</td>
<td>Calculator solution: 12.47%</td>
<td>Calculator solution:</td>
</tr>
<tr>
<td>4.76%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C</th>
<th>( PV = FV_6 \times PVIF_{k,6\text{yrs.}} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>R2,500 = R2,900 \times PVIF_{k,6\text{yrs.}}</td>
<td>0.862 = PVIF_{k,6\text{yrs.}}</td>
</tr>
<tr>
<td>2% &lt; k &lt; 3%</td>
<td></td>
</tr>
<tr>
<td>Calculator solution: 2.50%</td>
<td></td>
</tr>
</tbody>
</table>

b. Case

A Same as in a
B Same as in a
C Same as in a

c. The growth rate and the interest rate should be equal, since they represent the same thing.

P4-50. Personal finance: Rate of return: \( PV_n = FV_n \times (PVIF_{i,n}) \)

a. \( PV = R2,000 \times (PVIF_{i,3\text{yrs.}}) \)

<table>
<thead>
<tr>
<th></th>
<th>R1,500 = R2,000 \times (PVIF_{i,3\text{yrs.}})</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.75</td>
<td>= PVIF_{i,3\text{yrs.}}</td>
</tr>
<tr>
<td>10% &lt; i &lt; 11%</td>
<td></td>
</tr>
<tr>
<td>Calculator solution: 10.06%</td>
<td></td>
</tr>
</tbody>
</table>

b. Mr. Singh should accept the investment that will return R2,000 because it has a higher return for the same amount of risk.
Chapter 6: Interest rates and bond valuation

P6-11. Bond prices and yields

a. \[ 0.97708 \times R1,000 = R977.08 \]
b. \[ (0.05700 \times R1,000) \div R977.08 = R57.000 \div R977.08 = 0.0583 = 5.83\% \]
c. The bond is selling at a discount to its R1,000 par value.
d. The yield to maturity is higher than the current yield, because the former includes R22.92 in price appreciation between today and the May 15, 2017 bond maturity.

P6-18. Bond value and time – constant required returns

\[ B_0 = I \times (PVIFA_{r\%}, n) + M \times (PVIF_{r\%}, n) \]

<table>
<thead>
<tr>
<th>Bond</th>
<th>Table Values</th>
<th>Calculator Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>[ B_0 = R120 \times (6.142) + R1,000 \times (0.140) ] = R877.04</td>
<td>R877.16</td>
</tr>
<tr>
<td>(2)</td>
<td>[ B_0 = R120 \times (5.660) + R1,000 \times (0.208) ] = R887.20</td>
<td>R886.79</td>
</tr>
<tr>
<td>(3)</td>
<td>[ B_0 = R120 \times (4.946) + R1,000 \times (0.308) ] = R901.52</td>
<td>R901.07</td>
</tr>
<tr>
<td>(4)</td>
<td>[ B_0 = R120 \times (3.889) + R1,000 \times (0.456) ] = R922.68</td>
<td>R922.23</td>
</tr>
<tr>
<td>(5)</td>
<td>[ B_0 = R120 \times (2.322) + R1,000 \times (0.675) ] = R953.64</td>
<td>R953.57</td>
</tr>
<tr>
<td>(6)</td>
<td>[ B_0 = R120 \times (0.877) + R1,000 \times (0.877) ] = R982.24</td>
<td>R982.46</td>
</tr>
</tbody>
</table>

b. 

![Graph: Bond Value versus Years to Maturity]

c. The bond value approaches the par value.
P6-19. Personal finance: Bond value and time – changing required returns

\[ B_0 = I \times (PVIFA_{rd\%}, n) + M \times (PVIF_{rd\%}, n) \]

a.

<table>
<thead>
<tr>
<th>Bond</th>
<th>Table Values</th>
<th>Calculator Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>( B_0 = R110 \times (3.993) + R1,000 \times (0.681) = R1,120.23 )</td>
<td>R1,119.78</td>
</tr>
<tr>
<td>(2)</td>
<td>( B_0 = R110 \times (3.696) + R1,000 \times (0.593) = R1,000.00 )</td>
<td>R1,000.00</td>
</tr>
<tr>
<td>(3)</td>
<td>( B_0 = R110 \times (3.433) + R1,000 \times (0.519) = R \ 896.63 )</td>
<td>R      897.01</td>
</tr>
</tbody>
</table>

b.

<table>
<thead>
<tr>
<th>Bond</th>
<th>Table Values</th>
<th>Calculator Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>( B_0 = R110 \times (8.560) + R1,000 \times (0.315) = R1,256.60 )</td>
<td>R1,256.7</td>
</tr>
<tr>
<td>(2)</td>
<td>( B_0 = R110 \times (7.191) + R1,000 \times (0.209) = R1,000.00 )</td>
<td>R1,000.00</td>
</tr>
<tr>
<td>(3)</td>
<td>( B_0 = R110 \times (6.142) + R1,000 \times (0.140) = R \ 815.62 )</td>
<td>R      815.73</td>
</tr>
</tbody>
</table>

c.

<table>
<thead>
<tr>
<th>Required Return</th>
<th>Value</th>
<th>Bond A</th>
<th>Bond B</th>
</tr>
</thead>
<tbody>
<tr>
<td>8%</td>
<td></td>
<td>R1,120.23</td>
<td>R1,256.60</td>
</tr>
<tr>
<td>11%</td>
<td></td>
<td>1,000.00</td>
<td>1,000.00</td>
</tr>
<tr>
<td>14%</td>
<td></td>
<td>896.63</td>
<td>815.62</td>
</tr>
</tbody>
</table>

The greater the length of time to maturity, the more responsive the market value of the bond to changing required returns, and vice versa.

d. If Lynn wants to minimise interest rate risk in the future, she would choose Bond A with the shorter maturity. Any change in interest rates will impact the market value of Bond A less than if she held Bond B.

P6-25. Bond valuation – semi-annual interest

\[ B_0 = I \times (PVIFA_{rd\%}, n) + M \times (PVIF_{rd\%}, n) \]

<table>
<thead>
<tr>
<th>Bond</th>
<th>Table Values</th>
<th>Calculator Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>( B_0 = R50 \times (15.247) + R1,000 \times (0.390) = R1,152.35 )</td>
<td>R1,152.47</td>
</tr>
<tr>
<td>B</td>
<td>( B_0 = R60 \times (15.046) + R1,000 \times (0.097) = R1,000.00 )</td>
<td>R1,000.00</td>
</tr>
<tr>
<td>C</td>
<td>( B_0 = R30 \times (7.024) + R500 \times (0.508) = R \ 464.72 )</td>
<td>R      464.88</td>
</tr>
<tr>
<td>D</td>
<td>( B_0 = R70 \times (12.462) + R1,000 \times (0.377) = R1,249.34 )</td>
<td>R1,249.24</td>
</tr>
<tr>
<td>E</td>
<td>( B_0 = R3 \times (5.971) + R100 \times (0.582) = R \ 76.11 )</td>
<td>R      76.11</td>
</tr>
</tbody>
</table>
Chapter 7: Share valuation

P7-15. Personal finance: Ordinary share value – all growth models

a. \( P_0 = (CF_0 \div r) \)
\[
\begin{align*}
P_0 &= R42,500 \div 0.18 \\
P_0 &= R236,111
\end{align*}
\]

b. \( P_0 = (CF_1 \div (r - g)) \)
\[
\begin{align*}
P_0 &= (R45,475 \div (0.18 - 0.07)) \\
P_0 &= R413,409.10 \\
\text{Calculator solution: } R413,409.09
\end{align*}
\]

\( ^*CF_1 = R42,500(1.07) = R45,475 \)

c. Steps 1 and 2: Value of cash dividends and \( PV \) of annual dividends

<table>
<thead>
<tr>
<th>( t )</th>
<th>( D_0 )</th>
<th>( FVIF_{12%,t} )</th>
<th>( D_t )</th>
<th>( PVIF_{18%,t} )</th>
<th>( PV ) of dividends</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>R42,500</td>
<td>1.120</td>
<td>R47,600</td>
<td>0.847</td>
<td>R40,317.20</td>
</tr>
<tr>
<td>2</td>
<td>42,500</td>
<td>1.254</td>
<td>53,295</td>
<td>0.718</td>
<td>38,265.81</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>R78,583.01</td>
</tr>
</tbody>
</table>

Step 3: \( PV \) of price of share at end of initial growth period
\[
D_{2+1} = R53,295 \times (1 + 0.07)
\]
\[
D_3 = R57,025.65
\]
\[
P_2 = [D_3 \div (r_s - g)]
\]
\[
P_2 = R57,025.65 \div (0.18 - 0.07)
\]
\[
P_2 = R518,415
\]
\[
PV \text{ of share at end of year } 2 = P_2 \times (PVIF_{18\%,2})
\]
\[
PV = R518,415 \times (0.718) = R372,222
\]

Step 4: Sum of \( PV \) of dividends during initial growth period and \( PV \) price of share at end of growth period
\[
P_0 = R78,583 + R372,222
\]
\[
P_0 = R450,805
\]
\[
\text{Calculator solution: } R451,063.17
\]

P7-16. Free cash flow (FCF) valuation

a. The value of the total organisation is accomplished in three steps.

1) Calculate the \( PV \) of FCF from 2015 to infinity.
\[
FCF_{2015-\infty} = \frac{R390,000(1.03)}{0.11 - 0.03} = \frac{R401,700}{0.08} = R5,021,250
\]

(2) Add the \( PV \) of the cash flow obtained in (1) to the cash flow for 2014.
\[
FCF_{2014} = R5,021,250 + 390,000 = R5,411,250
\]
(3) Find the \( PV \) of the cash flows for 2010 through 2014.

<table>
<thead>
<tr>
<th>Year</th>
<th>FCF</th>
<th>( \text{PVIF}_{11%} )</th>
<th>( PV )</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>R200,000</td>
<td>0.901</td>
<td>R 180,200</td>
</tr>
<tr>
<td>2011</td>
<td>250,000</td>
<td>0.812</td>
<td>203,000</td>
</tr>
<tr>
<td>2012</td>
<td>310,000</td>
<td>0.731</td>
<td>226,610</td>
</tr>
<tr>
<td>2013</td>
<td>350,000</td>
<td>0.659</td>
<td>230,650</td>
</tr>
<tr>
<td>2014</td>
<td>5,411,250</td>
<td>0.593</td>
<td>3,208,871</td>
</tr>
</tbody>
</table>

Value of entire company, \( V_c = \text{R}4,049,331 \)

Calculator solution: \( \text{R}4,051,624 \)

b. Calculate the value of the ordinary share.

\[
V_S = V_c - V_D - V_P
\]

\[
V_S = \text{R}4,049,331 - \text{R}1,500,000 - \text{R}400,000 = \text{R}2,149,331
\]

c. Value per share = \[
\frac{\text{R}2,149,331}{200,000} = \text{R}10.75
\]

Calculator solution: \( \text{R}10.76 \)

P7-18. Book and liquidation value

a. Book value per share:

\[
\text{Book value per share} = \frac{\text{Book value of assets} - (\text{liabilities} + \text{preferred stock at book value})}{\text{number of shares outstanding}}
\]

\[
\text{Book value per share} = \frac{\text{R780,000} - \text{R420,000}}{10,000} = \text{R36 per share}
\]

b. Liquidation value:

<table>
<thead>
<tr>
<th>Asset Type</th>
<th>Value</th>
<th>Liquidation Value of Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>R40,000</td>
<td>R722,000</td>
</tr>
<tr>
<td>Marketable Securities</td>
<td>60,000</td>
<td></td>
</tr>
<tr>
<td>Trade receivables</td>
<td>108,000</td>
<td></td>
</tr>
<tr>
<td>(0.90 \times R120,000)</td>
<td></td>
<td>(160,000)</td>
</tr>
<tr>
<td>Inventory</td>
<td>144,000</td>
<td>(80,000)</td>
</tr>
<tr>
<td>(0.90 \times R160,000)</td>
<td></td>
<td>Available for CS</td>
</tr>
<tr>
<td>Land and buildings</td>
<td>195,000</td>
<td>R302,000</td>
</tr>
<tr>
<td>(1.30 \times R150,000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machinery &amp; equipment</td>
<td>175,000</td>
<td></td>
</tr>
<tr>
<td>(0.70 \times R250,000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liq. Value of assets</td>
<td>R722,000</td>
<td></td>
</tr>
</tbody>
</table>

\[
\text{Liquidation value per share} = \frac{\text{Liquidation value of assets}}{\text{Number of shares outstanding}}
\]

\[
\text{Liquidation value per share} = \frac{\text{R302,000}}{10,000} = \text{R30.20 per share}
\]
c. Liquidation value is below book value per share and represents the minimum value for the organisation. It is possible for liquidation value to be greater than book value if assets are undervalued. Generally, they are overvalued on a book value basis, as is the case here.

**P7-19. Valuation with price/earnings multiples**

<table>
<thead>
<tr>
<th>Organisation</th>
<th>EPS ( \times ) P/E</th>
<th>=</th>
<th>Share price</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3.0 ( \times ) (6.2)</td>
<td>=</td>
<td>R18.60</td>
</tr>
<tr>
<td>B</td>
<td>4.5 ( \times ) (10.0)</td>
<td>=</td>
<td>R45.00</td>
</tr>
<tr>
<td>C</td>
<td>1.8 ( \times ) (12.6)</td>
<td>=</td>
<td>R22.68</td>
</tr>
<tr>
<td>D</td>
<td>2.4 ( \times ) (8.9)</td>
<td>=</td>
<td>R21.36</td>
</tr>
<tr>
<td>E</td>
<td>5.1 ( \times ) (15.0)</td>
<td>=</td>
<td>R76.50</td>
</tr>
</tbody>
</table>
Chapter 14: Working capital and current assets management

P14-3. Multiple changes in CCC

a. AAI = 365 ÷ 6 times inventory = 61 days
   OC = AAI + ACP
       = 61 days + 45 days
       = 106 days
   CCC = OC − APP
       = 106 days − 30 days
       = 76 days
   Daily financing = R3,000,000 ÷ 365
                   = R8,219
   Resources needed = Daily financing × CCC
                      = R8,219 × 76
                      = R624,644

b. OC = 56 days + 35 days
     = 91 days
   CCC = 91 days − 40 days
     = 51 days
   Resources needed = R8,219 × 51
                   = R419,169

c. Additional profit = (daily expenditure × reduction in CCC) × financing rate
                    = (R8,219 × 26) × 0.13
                    = R27,780

d. Reject the proposed techniques because costs (R35,000) exceed savings (R27,780).

P14-6. EOQ, reorder point, and safety stock

a. EOQ = \sqrt{\frac{(2 \times S \times O)}{C}} = \sqrt{\frac{(2 \times 800 \times 50)}{2}} = 200 units

b. Average level of inventory = \frac{200 \text{ units}}{2} + \frac{800 \text{ units} \times 10 \text{ days}}{365}
   = 121.92 units

c. Reorder point = \frac{(800 \text{ units} \times 10 \text{ days})}{365 \text{ days}} + \frac{(800 \text{ units} \times 5 \text{ days})}{365 \text{ days}}
   = 32.88 units
d. Change  Do not change
(2) Carrying costs  (1) Ordering costs
(3) Total inventory cost  (5) EOQ
(4) Reorder point

P14-9. Trade receivables changes and bad debts

a. Bad debts
   - Proposed plan: \((60,000 \times R20 \times 0.04)\) = R48,000
   - Present plan: \((50,000 \times R20 \times 0.02)\) = 20,000
b. Cost of marginal bad debts = R28,000

c. No, since the cost of marginal bad debts exceeds the savings of R3,500.

d. Additional profit contribution from sales:
   - 10,000 additional units \(\times (R20 - R15)\) = R50,000
   - Cost of marginal bad debts (from part (b)) = 28,000
   - Savings = 3,500
   - Net benefit from implementing proposed plan = R25,500

This policy change is recommended because the increase in sales and the savings of R3,500 exceed the increased bad debt expense.

e. When the additional sales are ignored, the proposed policy is rejected. However, when all the benefits are included, the profitability from new sales and savings outweigh the increased cost of bad debts. Therefore, the policy is recommended.

P14-11. Initiating a cash discount

Additional profit contribution from sales = 2,000 additional units \(\times (R45 - R36)\) = R18,000

Cost of marginal investment in AR:

Average investment, proposed plan = \(\frac{42,000 \text{ units} \times $36}{365 \div 30}\) = R124,274

Average investment, present plan = \(\frac{40,000 \text{ units} \times $36}{365 \div 60}\) = 236,713

Reduced investment in AR = R112,439

Required return on investment \(\times 0.25 = 28,110\)

Cost of cash discount = \((0.02 \times 0.70 \times R45 \times 42,000 \text{ units})\) = (26,460)

Net profit from implementing proposed plan = R19,650

Since the net effect would be a gain of R19,650, the project should be accepted.
P14-13. Lengthening the credit period

Preliminary calculations:

Contribution margin = \frac{($450,000 - $345,000)}{450,000} = 0.23333

Variable cost percentage = 1 - \text{contribution margin}
= 1 - 0.233
= 0.767

a. Additional profit contribution from sales:
(R510,000 - R450,000) \times 0.23333 \text{ contribution margin} = R14,000

b. Cost of marginal investment in AR:
Average investment, proposed plan = \frac{510,000 \times 0.767}{365 \times 60} = R64,302

Average investment, present plan = \frac{450,000 \times 0.767}{365 \times 30} = 28,368

Marginal investment in AR = (R35,934)

Required return on investment \times 0.20

Cost of marginal investment in AR = (R7,187)

c. Cost of marginal bad debts:
Bad debts, proposed plan (0.015 \times R510,000) = R7,650
Bad debts, present plan (0.01 \times R450,000) = 4,500

Cost of marginal bad debts = (3,150)

d. Net benefit from implementing proposed plan = R3,663

The net benefit of lengthening the credit period is a surplus of R3,663; therefore the proposal is recommended.

Chapter 15: Current liabilities management

P15-2. Cost of giving up cash discount

a. (0.02 \div 0.98) \times (365 \div 20) = 37.24%
b. (0.01 \div 0.99) \times (365 \div 20) = 18.43%
c. (0.02 \div 0.98) \times (365 \div 35) = 21.28%
d. (0.03 \div 0.97) \times (365 \div 35) = 32.25%
e. (0.01 \div 0.99) \times (365 \div 50) = 7.37%
f. (0.03 \div 0.97) \times (365 \div 20) = 56.44%
g. (0.04 \div 0.96) \times (365 \div 170) = 8.95%
P15-3. Credit terms

a. 1/15 net 45 date of invoice
2/10 net 30 EOM
2/7 net 28 date of invoice
1/10 net 60 EOM

b. 45 days
49 days
28 days
79 days

c. Cost of giving up cash discount = \( \frac{CD}{100\% - CD} \times \frac{365}{N} \)

\[
\begin{align*}
\text{Cost of giving up cash discount} &= \frac{1\%}{100\% - 1\%} \times \frac{365}{30} \\
&= 0.0101 \times 12.17 = 0.1229 = 12.29\% \\
\text{Cost of giving up cash discount} &= \frac{2\%}{98\%} \times \frac{365}{(49 - 10)} \\
&= 0.0204 \times 9.359 = 0.1909 = 19.09\% \\
\text{Cost of giving up cash discount} &= \frac{2\%}{100\% - 2\%} \times \frac{365}{21} \\
&= 0.0204 \times 17.38 = 0.3646 = 36.46\% \\
\text{Cost of giving up cash discount} &= \frac{1\%}{100\% - 1\%} \times \frac{365}{(79 - 10)} \\
&= 0.0101 \times 5.2899 = 0.0534 = 5.34\%
\end{align*}
\]


a. Fixed-rate loan

Interest expense = loan amount \( \times \) (prime rate \( + \) percent over prime) \( \times \) (loan period \( ÷ \) 365)

\[
\begin{align*}
\text{R450,000} \times (0.12 + 0.025) \times \frac{180}{365} &= \text{R32,178.08}
\end{align*}
\]

b. Variable-rate loan

<table>
<thead>
<tr>
<th>Time period:</th>
<th>First 60 days</th>
<th>Days 61 to 90</th>
<th>Days 91 to 180</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prime rate:</td>
<td>12%</td>
<td>12%</td>
<td>12%</td>
</tr>
<tr>
<td>Percent over prime:</td>
<td>1.5%</td>
<td>2.0%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Applicable rate:</td>
<td>13.5%</td>
<td>14.5%</td>
<td>15%</td>
</tr>
<tr>
<td>Beginning amount owed:</td>
<td>R450,000</td>
<td>R459,986.30</td>
<td>R465,468.32</td>
</tr>
<tr>
<td>Interest expense:</td>
<td>R9,986.30</td>
<td>R5,482.02</td>
<td>R17,215.95</td>
</tr>
<tr>
<td>Amount owed at end of period:</td>
<td>R459,986.30</td>
<td>R465,468.32</td>
<td>R482,684.27</td>
</tr>
</tbody>
</table>

The variable rate loan, which has an interest expense of R32,684.27, is more costly.
P15-16. Accounts receivable as collateral

a. Acceptable accounts receivable

<table>
<thead>
<tr>
<th>Customer</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>R 8,000</td>
</tr>
<tr>
<td>E</td>
<td>50,000</td>
</tr>
<tr>
<td>F</td>
<td>12,000</td>
</tr>
<tr>
<td>H</td>
<td>46,000</td>
</tr>
<tr>
<td>J</td>
<td>22,000</td>
</tr>
<tr>
<td>K</td>
<td>62,000</td>
</tr>
<tr>
<td><strong>Total collateral</strong></td>
<td><strong>R200,000</strong></td>
</tr>
</tbody>
</table>

Adjustments: 5% returns/allowances, 80% advance percentage.

Level of available funds = [R200,000 × (1 – 0.05)] × 0.80 = R152,000

P15-19. Factoring

<table>
<thead>
<tr>
<th>Accounts</th>
<th>Amount</th>
<th>Date Due</th>
<th>Status on May 30</th>
<th>Amount remitted</th>
<th>Date of remittance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>R200,000</td>
<td>5/30</td>
<td>C 5/15</td>
<td>R196,000</td>
<td>5/15</td>
</tr>
<tr>
<td>B</td>
<td>90,000</td>
<td>5/30</td>
<td>U</td>
<td>88,200</td>
<td>5/30</td>
</tr>
<tr>
<td>C</td>
<td>110,000</td>
<td>5/30</td>
<td>U</td>
<td>107,800</td>
<td>5/30</td>
</tr>
<tr>
<td>D</td>
<td>85,000</td>
<td>6/15</td>
<td>C 5/30</td>
<td>83,300</td>
<td>5/30</td>
</tr>
<tr>
<td>E</td>
<td>120,000</td>
<td>5/30</td>
<td>C 5/27</td>
<td>117,600</td>
<td>5/27</td>
</tr>
<tr>
<td>F</td>
<td>180,000</td>
<td>6/15</td>
<td>C 5/30</td>
<td>176,400</td>
<td>5/30</td>
</tr>
<tr>
<td>G</td>
<td>90,000</td>
<td>5/15</td>
<td>U</td>
<td>88,200</td>
<td>5/15</td>
</tr>
<tr>
<td>H</td>
<td>30,000</td>
<td>6/30</td>
<td>C 5/30</td>
<td>29,400</td>
<td>5/30</td>
</tr>
</tbody>
</table>

The factor purchases all acceptable accounts receivable on a non-recourse basis, so remittance is made on uncollected, as well as collected accounts.