Implementing Capital Budgeting for the Multinational Corporation

BY

Xin Wang

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Promoter: P.J.W Pelle

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DECLARATION

Xin  Wang hereby declares that:

1. The work in this research paper is my own original work.
2. All sources used or referred to have been documented and recognized.
3. This research paper has not been previously submitted in full or partial
   fulfilment of the requirement of an equivalent or higher qualification at
   another recognized Educational Institution.

Signed:…………………………               Date:…………………………..
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CHAPTER ONE

1.1 INTRODUCTION

There are many reasons to believe that budgeting lies at the heart of business management. Gray et al (2001:324) states that “budgetary planning and control is the most visible use of accounting information in the management control process. By setting standards of performance and providing feedback by means of variance reports, the accountant supplies much of the fundamental information required for overall planning and control”. However, Gray et al (2001:324) point out that capital budgeting decision is limited by the intricacies of the international business environment, which is characterized by economic, social, political, and cultural diversity. Therefore, decisions of capital investments and budgetary controls are more problematic (Gray et al., 2001:14).

One of the defining characteristics of the globalization of the world economy in the past two decades has been the spread of multinational corporations’ activities across countries, and, as a result, significant increases in global foreign direct investment (FDI) outflow in the 1990s (from R233 billion in 1990 to R1, 379 billion in 2000). For example, the total stock of Chinese direct investment abroad nearly tripled over the 1990s (from $2.2 trillion in 1990 to $6.3 trillion in 2000) as Chinese multinational corporations generated an increasingly large share of world GDP (6.8% in 1994 and 8.6% in 2000). Multinational corporations have become an important conduit in the global allocation of investment funds. However, the business environment in international markets has been considered volatile; there is no reliable and accurate method to aid
multinational corporations about decisions about the international environment. Thus, multinational corporations have encountered risk and challenge. Given the development and challenge of the international environment, this study have been considered to plan over a longer time horizon, develop formal mechanisms to set aside funds for preserving existing facilities, increase automation of the process, and link capital planning decisions to statewide performance goals and strategic plans.

This research draws upon existing theoretical determinants of capital budgeting and empirically tests the hypotheses across a sample of multinational corporations in China. Although the sample is from China, the results have important implications for multinational corporations based in other countries.

This paper is composed of four parts. The first part briefly gives both a theoretical and practical overview of multinational capital budgeting analysis. The second part discusses the data collection techniques and the questionnaire design used in this study. The third part provides some important findings of this research. The last section offers some conclusions from this study.

1.2 THE PURPOSE OF RESEARCH

The purpose of this study is to examine several capital budgeting techniques and additional factors that may affect the multinational corporations’ practices.
1.3 THE PROBLEM STATEMENT

The main problem of this research project focuses on “How capital budgeting is used by multinational corporations.”

1.3.1 Sub-problem

In order to achieve the main problem, the following sub-problems should be addressed:

- Determine the differences between domestic and multinational corporations in capital budgeting.
- Determine how multinational corporations determine whether to invest in a foreign market.
- Determine how exchange rate movements are measured.
- Determine the Purchasing Power Parity (PPP), Balance of Payments Approach (BPA) and Monetary and Portfolio Approach (MPA) theories, and their implications for exchange rate changes.
- Determine the various techniques used to optimize cash flows and how to compute the effective financing rate.
- Determine how multinational capital budgeting can be applied on international projects and how it should be implemented, by using the Net Present Value (NPV), Internal Rate of Return (IRR), and Profitability Index (PI).
- Determine how corporate and country characteristics influence a multinational corporation’s capital budgeting.
- Determine the key theories that justify international risks.
1.4 DEFINITION OF KEY CONCEPTS

The specific meaning of key concepts to be used in this study must be defined. These key concepts for the proposed research are defined as follows:

**CAPITAL BUDGETING**

“Capital budgeting (or investment appraisal) is the planning process used to determine whether a firm's long term investments, such as new machinery, replacement machinery, new plants, new products and research development projects, are worth pursuing. It is budgeting for major capital, investment or expenditures”. (Wikipedia. 2008: 213).

**CASH FLOW**

According to Seth Armitage (2005:1), cash flow is essentially the movement of money into and out of companies; it's the cycle of cash inflows and cash outflows that determine your business's solvency.

**CAPITAL STRUCTURE**

“Capital structure is the framework of different types of financing employed by a firm to acquire resources necessary for its operations and growth. Commonly, it comprises stockholders' investments (equity capital) and long-term loans (loan capital), but, unlike financial structure, it
does not include short-term loans (such as overdraft) and liabilities (such as trade credit)”. (Wikipedia. 2008:247)

**CAPITAL EXPENDITURE**

Wikipedia (2008:243) states that “capital expenditures (CAPEX or capex) are expenditures creating future benefits. A capital expenditure is incurred when a business spends money either to buy fixed assets or to add to the value of an existing fixed asset with a useful life that extends beyond the taxable year. CAPEX is used by a company to acquire or upgrade physical assets such as equipment, property or industrial buildings. In accounting, a capital expenditure is added to an asset account ("capitalized"), thus increasing the asset’s basis (the cost or value of an asset as adjusted for tax purposes). CAPEX is commonly found on the Cash Flow Statement as "Investment in Plant Property and Equipment" or something similar in the Investing subsection”.

**CAPITAL BUDGETING TECHNIQUES**

“Capital budgeting techniques is a variety of measures that have evolved over time to analyse capital budgeting requests. The newer methods, like Net Present Value, use time value of money concepts. Older methods, like the Payback Period, have the deficiency of not using time value techniques and will eventually fall by the wayside and will be replaced in companies by the newer, superior methods of evaluation”. (CIMA terminology, 2007:296)
A capital budgeting analysis conducts a test to see if the benefits (i.e., cash inflows) are large enough to repay the company for three things:

- The cost of the asset
- The cost of financing the asset (e.g., interest, etc.)
- A rate of return (called a risk premium) that compensates the company for potential errors made when estimating cash flows that will occur in the distant future.

EXCHANGE RATE

“Exchange rate is the rate at which one currency may be converted into another. The exchange rate is used when simply converting one currency to another (such as for the purposes of travel to another country), or for engaging in speculation or trading in the foreign exchange market. There is a wide variety of factors which influence the exchange rate, such as interest rates, inflation, the state of politics and the economy in each country”. (CIMA terminology, 2007:500)

RISK MANAGEMENT

According to Carlos Correia, David Flynn, Enrico Uliana and Michael Wormald (2003:8-6), “risk management is the identification, assessment and prioritization of risks followed by a co-ordinated and economical application of resources to minimize, monitor and control the probability and/or impact of unfortunate events”.
1.5 DELIMITATION OF RESEARCH

For the research structure to be manageable, the research area was delineated as follows:

1.5.1 Geographical Demarcation

The empirical component of this study was limited to the Chinese multinational organization, to ease the cost of the data collection process.

1.5.2 Size of the Multinational Corporation

Multinational corporations employing more than 30 employees are used in this study. The motivation behind this is that larger multinational corporations will have a more comprehensive capital budgeting, which may be influenced by global forces.

1.6 THE RESEARCH HYPOTHESES

Research hypotheses can provide a direction for the researcher’s thinking to focus on the related information which will assist the researcher in solving the research’s main research problem and sub-problems (Leedy & Ormrod 2005:4).

For the propose of this study, some hypotheses are suggested as follows:

- Financial decision-makers are rational.
- The international market is perfectly competitive and efficient.
• Capital budgeting always involves allocating finite resources among competing investment opportunities.
• Every capital project has to be financed.
• The investment must involve international investment.
• The multinational corporations face risks that cannot happen in domestic markets.
• The current trend in asset acquisition exhibits management’s risk posture.

1.7 SIGNIFICANCE OF THE RESEARCH

This research will provide a comprehensive theory and opinions for the new multinational corporations to set up capital budgeting processes that fit their own developing need, and will help old multinational companies to check faults in their companies.

The four main benefits of the study are listed below:

• Doing sufficient research will reduce some avoidable mistakes in the practical application of the capital budgeting process.

• During the research study, the advantages and disadvantages of various capital budgeting methods will be identified to deal with practices of the multinational corporations.

• Capital budgeting processes will be better understood. The study will focus on providing comprehensive illustrations of concepts, methods and approaches for capital budgeting processes.
The study will show major risks that the multinational company face and put forward in a feasible capital budget.

1.8 RESEARCH DESIGN AND METHODOLOGY

In conducting the research project, the following procedure will be adopted to solve the main problem and sub-problem:

1.8.1 Literature Study

A literature study will be conducted from books, journals, the Internet and electronic databases. The objective of the literature study is to provide a theoretical framework for the study.

1.8.2 Empirical Study

The empirical study will involve the following:

- **Mail Survey**
  A mail survey will be conducted among selected multinational corporations by means of a detailed questionnaire. This will be done to establish what methods of restructuring and work design these multinational corporations were either using or planning to use, to deal with the effects of international markets.

- **Measuring Instrument**
  A detailed questionnaire will be used to obtain the required information.
• **Sample**
A random sample, consisting of multinational corporations employing more than 100 people and which are located in China, will be used for the mail survey.

• **Statistical Analysis of Data**
Statistical analysis will be used to analyse and interpret the data obtained from the questionnaires. This statistical analysis will be conducted with the assistance of a statistician during the planning stage of questionnaire.

1.9 OUTLINE OF STUDY

**Chapter 1: Introduction to the Study**
This chapter outlines the main problem and sub-problems, and defines the definitions of the key concepts and the significance of the research. Research methodology and a delimitation of the study are also outlined.

**Chapter 2: Understanding Capital Budgeting**
This chapter focuses on capital budgeting, including developments, principles, function components, limitations of capital budgeting, capital budgeting methods and the structure of capital budgeting in multinational corporations.

**Chapter 3: Cost of Capital and Cash Flow**
This chapter focuses on how capital budgeting in multinational corporations is used to control cost and manage cash flow.
Chapter 4: Capital Budgeting Process for Risks and Problems
This chapter focuses on which risks and problems the multinational corporations will face in international markets.

Chapter 5: Research Methodology
This Chapter focuses on a detailed discussion of the research methodology, data collection and data analysis.

Chapter 6: Implementation of Approved Capital Budget
This chapter reports on the findings of the empirical study.

Chapter 7: Summary, Conclusion and Recommendation for Future Research
This chapter contains the conclusions of the findings, and suggestions for further possible research.
CHAPTER TWO

2.1 INTRODUCTION

This chapter provides a general view of capital budgeting studies that have been carried out and discusses many of the general theories practiced in multinational firms. It also explains the commonalities and differences between multinational and domestic capital budgeting.

Capital budgeting involves making investment decisions concerning the financing of capital projects by multinational corporations. Making a good investment decision is important since funds are scarce and it will add to the value of the firm, especially in multinational corporations. Capital investment decision is thus one of the requirements, if properly applied, that can accelerate economic development. To understand multinational capital budgeting properly, the concept of general capital budgeting needs to be identified to understand the components of the capital budgeting process, realize which general factors influence capital budgeting and consider commonalities and differences between domestic and multinational capital budgeting.
2.2 THE DEFINITION OF CAPITAL BUDGETING

Wikipedia (2008:213) states that “capital budgeting (or investment appraisal) is the planning process used to determine whether a firm's long term investments, such as new machinery, replacement machinery, new plants, new products and research and development projects, are worth pursuing”.

Matt (2004:123) states that “capital budgeting is a required managerial tool. One duty of a financial manager is to choose investments with satisfactory cash flows and rates of return”. Therefore, a financial manager must be able to decide whether an investment is worth undertaking and be able to choose intelligently between two or more alternatives. To do this, a sound procedure to evaluate, compare, and select projects is needed.

From the above definition of capital budgeting, it can be seen that capital budgeting lies at the heart of business management, and its mission is to provide useful and comprehensive information and suitable development plans for investment and management decisions.

2.3 COMPLEXITIES OF CAPITAL BUDGETING FOR A MULTINATIONAL CORPORATION

Shahrokh (2002:123) states that multinational capital budgeting, like domestic capital budgeting, focuses on the cash flows of prospective long-term investment projects. It is used both in traditional, foreign, direct-investment analysis, such as the construction of a chain of retail
stores in another country, as well as in cross-border mergers and acquisitions activity. Capital budgeting for a foreign project uses the same net present value (NPV) discounted cash flow model as that used in domestic capital budgeting.

However, Shahrokh (2002:145) states that multinational capital budgeting is considerably more complex due to a number of additional factors that need to be considered. Some of these factors are as follows:

- Terminal values
- Financing versus operating cash flows
- Foreign currency fluctuations
- Long-term inflation rates
- Subsidized financing
- Political risk
- Parent versus project cash flows.

**Terminal values:** While terminal values of long-term projects are difficult to estimate even in the domestic context, they become far more difficult in the multinational context due to the added complexity from some of the factors discussed above. An added dimension is that potential acquirers may have widely divergent perspectives to them on the value of acquiring the terminal assets. This is particularly relevant if the assets are located in a country that is economically segmented due to a host of restrictions on cross-border flow of physical or financial assets.

In conducting multinational capital budgeting analyses from a parent's perspective, the additional risk arising from projects located abroad can be handled in at least two ways. One possibility is to add a foreign risk premium to the discount rate that would be used for a domestic project.
This higher rate is intended to capture the additional uncertainties arising from exchange risk, political risk, inflation, and such factors. The second possibility is to adjust the cash flows for the foreign projects to reflect the additional risk. The discount rate stays the same as that of domestic projects. Thus, the additional complexities resulting from doing business abroad must be incorporated in the analysis through adjustments to either the discount rate or the projected cash flows. Rather than make these adjustments arbitrarily, multinational firms can use wide-ranging publicly available data, historical analysis and professional advice to make reasonable decisions.

**Financing versus operating cash flows:** In multinational investment projects, the type of financing package is often critical in making otherwise unattractive projects attractive to the parent company. Thus, cash may flow back to the parent because the project is structured to generate such flows via royalties, licensing fees, dividends, and so on. Unlike that of domestic capital budgeting, operating cash flows cannot be kept separate from financing decisions.

**Foreign currency fluctuations:** Another added complexity in multinational capital budgeting is the significant effect that fluctuating exchange rates can have on the prospective cash flows generated by the investment. From the parent's perspective, future cash flows abroad have value only in terms of the exchange rate at the date of repatriation. In conducting the analysis, it is necessary to forecast future exchange rates and to conduct sensitivity analysis of the project's viability under various exchange rate scenarios.
**Long-term inflation rates:** Differing rates of national inflation and their potential effect on competitiveness must be considered. Inflation will have the following effects on the value of the project: a) it will impact on the local operating cash flows, both in terms of the prices of inputs and outputs and also in terms of the sales volume depending on the price elasticity of the product; b) it will impact on the parent's cash flow by affecting the foreign exchange rates, and c) it will affect the real cost of financing choices between foreign and domestic sources of capital.

**Subsidised financing:** In situations where a host government provides subsidized project-financing at below-market rates, the value of that subsidy must be explicitly considered in the capital budgeting analysis. If a company uses the subsidised rates in the analysis, there is an implicit assumption that the subsidy will exist through the life of the project. Another approach might be to incorporate the subsidised interest rates into the analysis by including the present value of the subsidy rather than adjusting the cost of capital.

**Political risk:** This is another factor that can significantly impact on the viability and profitability of foreign projects. Whether it be through democratic elections or as a result of sudden developments, such as revolutions or military coups, changes in a country's government can affect the attitude in that country towards foreign investors and investments. This can affect the future cash flows of a project in that country in a variety of ways. Political developments may also affect the life and the terminal value of foreign investments.

**Parent versus project cash flows:** Parent (that is, home-country) cash flows must be distinguished from project (that is, host-country) cash flows. While parent cash flows reflect all cash flow consequences for the
consolidated entity, project cash flows look only at the single country where the project is located. For example, cash flows generated by an investment in China may be partly or wholly taken away from one in South Africa, with the end result that the net present value of the investment is positive from the Chinese affiliate's point of view but contributes little to the firm's world-wide cash flows.

2.4 PRINCIPLES OF CAPITAL BUDGETING

Because multinational corporations hold colossal and complex frameworks in modern business and face different characteristic markets, they usually have detailed principles for administering capital budgeting. Several major principles for capital budgeting are:

- Estimating need
- Approval for proposal
- Planning horizon.

2.4.1 Estimating Need

Brickley (2006:245) states that multinational corporations, after finding investment opportunities, must conduct certain investigations before investing in a project. They need to estimate project information that decides whether they start a project. When multinational corporations make estimations from data, the following principles are complied with:

- They always use four points while estimating information: past performance, historical data, future expectations and the
recommendations of all departments in the multinational corporation.

- Multinational corporations must have the necessary skills to verify the estimates of data and also to check differences.

- A financial manager must have the ability to develop realistic and accurate capital budgeting.

### 2.4.2 Approval of Proposals

Brickley (2006:246) states that multinational corporations must set comprehensive approval for proposals to make sure of the project's feasibility. Here are some points:

- The larger the amount invested in a project, the higher the level established to discuss the project's feasibility.
- A planning manager must have the power and ability to decide on the small purchases.
- Major purchases must be approved by the top management or the board of directors.

### 2.4.3 Planning Horizon

Brickley (2006:246) states that capital budgeting is not a short-term action. It is prepared at least one year in advance and may extend five, ten, or even fifteen years into the future. Therefore, the planning horizon is imbued with various conditions and complicated environments. For example, with the rapid development of technology, multinational
corporations have to adopt new technology to achieve competitive advantages and satisfy the customers’ needs. In this situation, multinational corporations must plan for return on investment, calculate cost during the project, and provide resources to avoid risks. In general, the planning horizon includes two aspects (Shahrokh, 2002:145):

- A specific set of proposals will be considered for the next five to seven years.
- A different set of expectations will be prepared for the long-term period beyond seven years.

2.5 MAKING CAPITAL INVESTMENT

Douglas (2005:419) states that the capital investment process includes the following:

- **Generating Ideas for Capital Investments**
- **Classifying Capital Investments**
- **Evaluating and Choosing Proposed Capital Investments.**

2.5.1 Generating Ideas for Capital Investments

Douglas (2005:421) states that the first - and most important - part of the capital investment process is the generation of new ideas. Ideas for capital investments can originate anywhere in a company. Often plant managers are responsible for identifying potential projects that will enable their plants to operate on a different scale or on a more efficient basis. For instance, a plant manager might suggest adding 10,000 square feet of production space to a plant or replacing a piece of equipment with a
newer, more efficient machine. Ideas for better types of equipment that can help the company operate more efficiently may come from individuals on the plant floor. After screening out undesirable ideas, managers will then send the ones that appear to be attractive to the divisional level, with supporting documentation. Douglas (2005:421) states that three important stages provide new ideas:

- Bottom-up process
- Top-down process
- Research and development

**Bottom-up process:** Douglas (2005:433) states that this bottom-up process results in ideas percolating upward through the organization. At each level, ideas submitted by lower-level managers are screened, and attractive ones are forwarded to the next level. In addition, managers at successively higher levels, who are in a position to take a broader view of the company's business, add ideas that may not be visible - or desirable - to lower-level managers.

**Top-down process:** At the same time, Douglas (2005:433) states that there is also a top-down process at work in most companies. Strategic planners will generate ideas regarding new businesses the company should enter, other companies it might acquire, and ways to modify its existing businesses to achieve greater profitability. Strategic planning is a critical element in the capital investment process. The processes complement one another; the top-down process generates ideas of a broader, more strategic nature, whereas the bottom-up process generates ideas of a more project-specific nature.
**Research and development:** In addition, Douglas (2005:435) states that many multinational companies have a research and development (R&D) group, either within a production division or as a separate department. An R&D group often provides new ideas for products that can be sent on to a marketing research department.

### 2.5.2 Classifying Capital Investments

Douglas (2005:443) states that “analysis costs money”. Therefore, certain types of investments receive only cursory checks before approval, whereas others are subjected to extensive analysis. Generally, less costly and more routine investments are subjected to less extensive evaluation. As a result, multinational companies typically categorize investments and analyse them at the level judged appropriate to their category. Potential investments in each category may have a lot in common and are able to be analysed similarly. A useful set of investment classifications is (Douglas, 2005:443):

- Maintenance projects
- Cost-saving / revenue-enhancement projects
- Capacity expansions in current businesses
- New products and new businesses
- Projects required by government regulation or company policy.

**Maintenance expenditures:** At the most basic level, a company must make certain investments to continue to be a healthy, profitable business. Replacing worn-out or damaged equipment is necessary to continue in business. Therefore, the major questions concerning such investments are "Should we continue in this business?" and if so, "Should we continue
to use the same production process?" Since the answers to these questions are so frequently "yes", an elaborate decision-making process is not needed, and typically such decisions are approved with only routine review.

Cost-savings / Revenue enhancement: Projects in this class include improvements in production technology to realize cost-savings and marketing campaigns to achieve revenue enhancement. The central issue is increasing the difference between revenue and cost; the result must be sufficient to justify the investment.

Capacity expansion in current businesses: Deciding on expanding the current business is inherently more difficult than approving maintenance or cost-saving proposals. Multinational corporations have to consider the economics of expanding or adding new facilities. They must also prepare demand forecasts, keeping in mind competitors’ likely strategies. Marketing consultants may help, but this class of projects naturally has more uncertain return projections than do maintenance or replacement projects.

New products and new businesses: Projects in this category, which include research and development (R&D) activities, are among the most difficult to evaluate. Their newness and long-lead times make it very difficult to forecast product demand accurately. In many cases, the project may be of special interest because it would give the company an option to break into a new market. For example, a company that has a proprietary technology might spend additional R&D funds trying to develop new products based on this technology. If successful, these new products could pave the way for future profitable investment opportunities. Access to such opportunities represents valuable options for the company.
Meeting regulatory and policy requirements: Government regulations and/or company policies concerning such things as pollution control and health or safety factors are viewed as costs. Often, the critical issue in such projects is meeting the standards in the most efficient manner - at the minimum cost.

2.5.3 Evaluating Proposals

Douglas (2005:243) states that the typical stages for the development and approval of a capital investment proposal are the following:

- Approve funds for research that may result in a product idea.
- Approve funds for market research that may result in a product proposal.
- Approve funds for product development that may result in a usable product.
- Approve funds for plant and/or equipment for the production and sale of the new product.

Douglas (2005:22) suggests that each stage involves an investment decision at one or more levels of the company. At each stage, the company re-estimates the value expected to be created - the NPV - of going ahead. With this kind of sequential appropriation of funds, an automatic progress review is enforced, enabling early cancellation of unsuccessful projects. At each stage there are options to abandon, postpone, change or continue.

Armitage (2005:43) states that proposed expenditures that are larger than certain company-set limits generally require a written proposal from the initiator. Typically, such limits are higher in smaller privately-owned
companies, which tend to have relatively informal organizational structures. Most companies use standard forms, and these are often supplemented by written memoranda for larger, more complex projects. Also, there may be consulting or other studies prepared by outside experts; for example, economic forecasts from economic consultants.

“For a successful multinational corporation, a maintenance project might require only limited supporting information” (Armitage, 2005:106). In contrast, a new product would require extensive information-gathering and analysis. At the same time, within a category, managers at each level usually have upper limits on their authority regarding both expenditures on individual assets and the total expenditure for a budgeting period. In this way, larger projects require the approval of higher authority.

For example, at the lowest level, a department head may have the authority to approve R50,000 in total equipment purchases for the year. However, that same person might have to obtain specific approval from higher authority to spend more than R10,000 for any single piece of equipment. A plant manager might have authorization limits of R500,000 per year and R100,000 per piece of equipment, for example.

Armitage (2005:106) points out that a system of authorization, such as that illustrated in the preceding paragraph, requires more extensive review and a greater number of inputs to approve larger expenditures. The hierarchical review structure reflects the obvious fact that misjudging a larger project is potentially more costly than misjudging a smaller one.
2.6 CAPITAL BUDGETING PROCESS

According to Armitage (2005:1), a capital budgeting objective of multinational corporations is to maximize the values of multinational corporations. At the same time, not all multinational corporations and investment projects have free resources. Therefore, the first important stage in defining capital investment is to design the preliminary stages of the capital budgeting process. This ensures a successful investment and determines whether the project can be invested. Based on the previous literature, Figure 2.1 below demonstrates the stages of the capital budgeting process in the multinational corporation.

Parts of the capital budgeting process in Figure 2.1 will be interpreted in detail on the following page:
Figure 2.1: The Capital Budgeting Process
Source: Don Dayanandy, 2002:2
The following define capital budgeting process within figure 2.1:

- The strategic plan
- Identification of investment opportunities
- Preliminary screening of the project
- Financial appraisal of the project
- Qualitative factors in project evaluation
- Accepting / rejecting decision
- Implementation and monitoring project
- Post-implementation audit

2.6.1 The Strategic Plan

Dayananda (2002:5) states that the strategic plan is designed to express the objective of multinational corporations. To achieve the feasible objective for the multinational corporation’s development, it must clearly identify some important parts of the strategic plan:

- Which business the multinational corporation is developing at the present time.
- Where the multinational corporation needs to develop in the future.
- How the multinational corporation translates the firm’s objective into practical works - such as specific principles, direction, structure, and so on.
2.6.2 Identification of Investment Opportunities

According to Dayananda (2002:6), two important parts of capital budgeting are the identification of investment opportunities and the generation of investment project proposals. Good investment opportunities can be used for the multinational corporation’s objective and strategic objective. Therefore, in this step, project proposals are designed according to the identification of investment opportunities.

Dayananda (2002:213) states that investment opportunities may occur in different places and times. There are two major aspects provided for investment opportunities. Some investments are mandatory - because some particular regulations are essential for the multinational corporation to keep in order to do their business. Other investments are discretionary and are generated by specific environments – such as environments, growth opportunities, cost reduction, and so on.

Dayananda (2002:6) states that investment opportunities are discretionary, but they represent the strategic plan or provide new direction for the strategic plan. Capital budgeting can ensure that the proposed investments are evaluated, selected, and implemented. Investment opportunities are the basis of the capital budgeting process.

2.6.3 Preliminary Screening of the Project

Dayananda (2002:6) states that not all potential investment proposals can go through the rigorous project analysis process. Also the multinational corporation cannot spend amounts of money and time to analyse every
Thus, project managers will preliminarily screen project proposals by subject. In the process, practical work involves preliminary quantitative analysis and judgement, based on the institution’s feelings and experience.

2.6.4 Financial Appraisal of the Project

According to Dayananda (2002:7), after proposals pass the preliminary screening step, the multinational corporation needs to do more analysis for the investment value. In the process, the major work will involve rigorous financial appraisal that determines whether the multinational corporation can achieve the profit and provide correlative data. The rigorous financial appraisals include the following:

- Predict the expected future cash flow of the project.
- Analyse the risk associated with the cash flow.
- Develop an alternative cash flow forecast.
- Examine possible changes in the predicted cash flows.
- Subject the cash flows to simulation.
- Prepare alternative estimates of the project’s net present value.
- Provide the estimated addition to the firm’s value in terms of the project’s net present value.

From the above it can be seen that the rigorous financial analysis involves:

- The application of forecast techniques
- Project evaluation techniques
• Risk analysis
• Mathematical programming techniques

Results of the financial appraisal play an important role in the overall capital budgeting process. They heavily influence the multinational corporation in selecting projects or making investment decisions that affect the success or failure of the firm and its future direction.

2.6.5 Qualitative Factors in Project Evaluation

According to Dayananda (2002:7), after the financial appraisal, the multinational firm should consider qualitative factors for project proposals. Qualitative factors are those which will have an impact on investment projects, but which are virtually impossible to evaluate accurately in monetary terms. The factors are:

• The societal impact of an increase or decrease in employee numbers
• The environmental impact of the project
• Possible positive or negative governmental political attitudes towards the project
• The strategic consequences of consumption of scarce raw materials
• Positive or negative relationship with labour unions about the project
• Possible legal difficulties with respect to the use of patents, copyrights and trade or brand names
• The impact on the multinational corporation’s image if the project is socially questionable.
During the operation of the multinational corporation’s project, it will face the above problems. Various departments of the multinational corporation will discuss and consult on these problems. The discussion will be lengthy and results can be predicted.

Management experience and judgement skills are an important part of that stage. When the multinational corporation estimates notional monetary cost or benefits for the multinational project and incorporates those values into the appropriate cash flows, management experience and judgement skills will be imbedded in the process to impact on the analysis.

2.6.6 Accepting / Rejecting Decision

According to Dayananda (2002:8), this step is the most important step in a capital budgeting process. Managers need to decide whether the project is accepted or rejected. In the process, all information, coming from the financial appraisal and qualitative results and data, will be collected for making decisions. Managers with experience and knowledge also need to consider other information and relevant information.

2.6.7 Implementation and Monitoring project

According to Dayananda (2002:8), after the multinational corporation accepts the project proposal, it will implement and complete the project according to plan.
According to Dayananda (2002:8), capital budgeting is not an abstraction. It will face some practical problems, such as human relationship, ambition, political manoeuvring and so on. For example, human emotion will influence capital budgeting operations. Therefore, the multinational corporation should build comprehensive and effective methods to monitor and control the capital budgeting process. There are some norms for monitoring and controlling the capital budgeting.

- Establish a comprehensive audit system to control cash flows related to the acquisition of the project.
- Establish an internal accounting control procedure to accumulate all relevant project-related costs.
- Use periodic progress reports that gauge actual expenditures against estimates.
- Provide timely explanations for significant variances

### 2.6.8 Post-implementation audit

According to Dayananda (2002:213), “a post-implementation audit does not relate to a current decision support process of the investment project; it deals with a post-mortem of the performance of already implemented projects.” However, the post-implementation audit can provide contributions to the multinational corporation, including:

- The improvement of current investments
- Useful information for project appraisal
- The establishment of a new strategic plan.
2.7 CONCLUSION

In this chapter, an overview of the literature studied on capital budgeting for multinational corporations, and general capital budgeting perceptions has been provided.

Firstly, the concept of capital budgeting was introduced to realize the capital budgeting mission. The complexity of capital budgeting was identified for new development in multinational capital budgeting.

Secondly, capital budgeting principles express how capital budgeting is established.

Thirdly, this chapter described how the multinational corporation makes investments to ensure that the multinational corporation selects suitable capital projects, according to generating ideas, project type and different proposals which influence the establishment of the capital budgeting process.

Chapter 3 will present a review of cash flows and will measure their impact upon the multinational corporation’s wealth.
3.1 INTRODUCTION

This chapter focuses on how multinational corporations forecast and assess rates of return for capital budgeting analysis to accept or reject foreign investments. The key to investing successfully in foreign projects is whether the multinational corporation establishes a good capital budgeting analysis system to forecast and appraise. This system must depend firstly on cash budgeting systems that track and forecast foreign investment cash inflow and outflow.

To understand properly how multinational corporations forecast and assess foreign investment, some concepts of cash flow will be introduced in this chapter. These include the definition of cash flow, elements of cash flows and cash flow activities. Considering the complexity of the multinational corporation, this chapter will introduce total cash flow and incremental cash flow, reasons for differences between total and incremental cash flow, and parent versus project cash flow.

Secondly, this chapter focuses on other impacts of capital budgeting analysis such as capital structure.

Thirdly, the chapter focuses on how multinational corporations to make the right appraisal, so capital budgeting methods will be analysed.
3.2 CASH FLOW

One of most important aspects of capital budgeting is turning economics and technicalities of a project into estimated future cash flows. It is central to all decisions of multinational corporations that capital budgeting methods rely on measures of cash flows into and out of the firm. David (2004:2) states that multinational capital budgeting analysis, focusing on cash flow, showed that:

- It easily measures the impact upon the firm’s wealth.
- Profit and loss in financial statements do not always represent the net increase or decrease in cash flows.
- Cash flows occur at different times and these times are easily identifiable.
- The time of flows is particularly important for capital budgeting analysis.
- Cash flow can provide existing data for forecasting projects.
- Cash flow will change the firm’s overall cash flow as a direct result of decision to be accepted or rejected.

3.2.1 Definition of Cash Flow

Wikipedia (2008:56) states that “cash flow (also called net cash flow) is the balance of the amounts of cash being received and paid by a business during a defined period of time, sometimes tied to a specific project. Effective cash flow management is essential for the survival of the business”.

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Ward (2000:1) states that “cash flow analysis is the study of the cycle of one’s business's cash inflows and outflows, with the purpose of maintaining an adequate cash flow for one’s business, and to provide the basis for cash flow management”.

Cash flow analysis involves examining the components of a business that affect cash flow, such as accounts receivable, inventory, accounts payable, and credit terms. By performing a cash flow analysis on these separate components, one will be able to identify cash flow problems more easily and find ways to improve one’s cash flow.

3.2.2 Elements of Cash Flows

According to Ward (2000:12), cash inflows and outflows will have various components. A brief description of these components is provided below:

- Initial investment
- Salvage value
- Working capital
- Revenues or savings
- Manufacturing costs
- Borrowed funds
- Income taxes
- Capital gains tax

**Initial investment**: All projects will require some initial capital outlay. This initial investment will be a cash outflow.
**Salvage value:** At the end of the project some salvage value can be recovered. The salvage value is a net amount, net of any removal or dismantling costs. If the net salvage value is small, it can be excluded from the cash flow analysis. Salvage value is usually positive, which means it is a cash inflow. But there can be cases when the dismantling and removal costs outweigh the returns from the salvaged asset, thereby rendering the net salvage value negative.

**Working capital:** Sometimes projects need investment in non-depreciable assets to support the operations required by the project. Capital assets are depreciable and investment in capital assets is a major portion of initial investment. But money needed for working capital is also part of the initial investment and is a cash outflow. During the course of the project when the working capital is returned or recovered, the money received by the company is classified as cash inflow. If a project is successful and runs the full course of its life, the initial investment in working capital is recovered sometime during the life of the project. Hence working capital can either be cash outflow or inflow.

**Revenues or savings:** Revenues obtained from the sale of a product is a cash inflow. If no new revenue is generated by the project but costs of operation or maintenance are reduced, the reduction of cost will have the same effect on the profitability of the project as generation of an equivalent amount of revenue would have, and hence the reduction of costs is also treated as cash inflow.
Manufacturing costs: The cost of material to produce a product is expenditure and is a cash outflow. Manufacturing will also involve labour, periodic maintenance and overhead costs.

Borrowed funds: Occasionally companies borrow money for a project. The borrowed amounts are receipts and hence constitute cash inflows. The borrowed amounts will eventually need to be paid back. The repayment of borrowed funds is cash outflow, as well as interest payments on the loan.

Income taxes: Tax payments are expenditures, and they constitute a part of the cash outflow. Their effect is accounted for in the computation of net income. Net income is the taxable income less income taxes. And net income is a part of the project cash flow.

Capital gains tax: A capital gains tax (abbreviated: CGT) is a tax charged on capital gains, the profit realized on the sale of a non-inventory asset that was purchased at a lower price. The most common capital gains are realized from the sale of shares, bonds, precious metals and property. Not all countries implement a capital gains tax and most have different rates of taxation for individuals and corporations.

3.2.3 Cash Flow Activities

Bodie, Zane; Alex Kane and Alan J. Marcus (2004:12) state that a cash flow statement is partitioned into cash flow resulting from:
• Operating activities
• Investing activities
• Financing activities.

**Operating activities**: Wikipedia (2008:56) states that operating activities involve the cash effects of transactions and other events that enter into the determination of net income. Operating cash flows include:

• Receipts from the sale of goods or services
• Receipts for the sale of loans, debt or equity instruments in a trading portfolio
• Interest received on loans
• Dividends received on equity securities
• Payments to suppliers for goods and services
• Payments to employees or on behalf of employees
• Tax payments
• Interest payments
• Payments for the sale of loans, debt or equity instruments in a trading portfolio.

**Investing activities**: Wikipedia (2008:57) states that investing activities focus on purchase of long-term assets. A multinational corporation needs to appraise investing activities in order to gain profit. Investing activities include:

• Collections on loan principal and sales of other firms’ debt instruments
• Investment returns from other firms’ equity instruments, including sale of those instruments
• Receipts from sale of plant and equipment
• Expenditure for purchase of plant and equipment
• Loans made and acquisition of other firms’ debt instruments
• Expenditure for purchase of other firms' equity instruments (unless held for trading or considered cash equivalents)
• Capital expenditures, which include purchases (and sales) of property, plant and equipment
• Investments.

**Financing activities:** Wikipedia (2008:56) states that financing activities include the inflow of cash from investors such as banks and shareholders, as well as the outflow of cash to shareholders in the form of dividends as the company generates income. Other activities which impact on the long-term liabilities and equity of the company are also listed in the financing activities section of the cash flow statement. Financing cash flows include:

• Proceeds from issuing shares
• Proceeds from issuing short-term or long-term debt
• Payments of dividends
• Payments for repurchase of company shares
• Repayment of debt principal, including capital leases
• Receipts of donor-restricted cash limited to long-term purposes for non-profit organizations.

### 3.2.4 Total Cash Flow versus Incremental Cash Flow

When multinational corporations conduct a capital budgeting analysis from cash flows, they must focus on total cash flow and incremental cash flows. Total cash flows and incremental cash flows have different functions for a capital budgeting analysis in evaluating projects.
According to Alan (2005:457), the important part of a capital budgeting analysis is to calculate total cash flows associated with the project. The total cash flow is the entire project’s cash flows. It includes three aspects:

- Cost of funding the project
- Cash inflows during the life of the project
- Ending value of the project.

Alan (2005:457) states that “shareholders are interested in how much additional money they will receive in the future. Hence, what matters is not the project’s total cash flows per period, but incremental cash flows generated by the project”.

In a capital budgeting analysis, differences between total and incremental cash flows are very important. Alan (2005:457) states that there are some reasons for differences between total and incremental cash flows:

- Cannibalization
- Sales creation
- Opportunity cost
- Transfer pricing
- Free cash flows.

**Cannibalization**: In marketing, cannibalization is the decreased demand for an existing product that occurs when its vendor releases a new and similar product. For example, when a multinational corporation markets a
new product, older products will suffer some erosion of sales or market share. That erosion is referred to as cannibalization

**Sale creation:** Relative to cannibalization, some existing products still have developing space and can achieve more profits compared to the new products, so it is necessary to develop existing products. This phenomenon is called a Sale Creation. Alan (2005:457) states that additional sales and associated incremental cash flows are important parts of calculating a project’s cash flow.

**Opportunity cost:** Alan (2005:458) states that when multinational corporations invest in foreign projects, they must consider the economic cost of any resources required for projects, regardless of whether multinational corporations own the resource or have to go out and acquire it. This true cost is called an opportunity cost.

**Transfer pricing:** Alan (2005:458) states that “the transfer pricing at which goods and services are traded internally can significantly distort the profitability of a proposed investment.”

**Free cash flows:** Alan (2005:458) argues that excess free cash flow is cash flow in excess of that required to fund all projects that have positive NPV. Multinational corporations with excess free cash flow face conflicts of interest between stockholders and managers.
3.3 CAPITAL STRUCTURE

According to Baker (2002:53), in finance, capital structure refers to the way a corporation finances its assets through some combination of equity, debt or hybrid securities. A firm's capital structure is then the composition or 'structure' of its liabilities. For example, a firm that sells R20 billion in equity and R80 billion in debt is said to be 20% equity-financed and 80% debt-financed. The firm's ratio of debt to total financing, 80% in this example, is referred to as the firm's leverage. In reality, capital structure may be highly complex and include tens of sources.

In the next few sections, this study discusses environments that form a firm's capital structure. After analyzing a number of environments, a firm establishes a capital structure it believes is optimal, which is then used as a guide for raising funds in the future.

3.3.1 Capital Structure in a Perfect Market

According to the theory of Baker (2002:54), the following assumption is a perfect capital market (no transaction or bankruptcy costs; perfect information); firms and individuals can borrow at the same interest rate; no taxes; and investment decisions aren't affected by financing decisions. Modigliani (2003:261) made two findings under these conditions:

The first 'proposition' was that the value of a company is independent of its capital structure.
The second 'proposition' stated that the cost of equity for a leveraged firm is equal to the cost of equity for an unleveraged firm, plus an added premium for financial risk. That is, as leverage increases, while the burden of individual risks is shifted between different investor classes, total risk is conserved and hence no extra value created.

3.3.2 Capital Structure in the Real World

According to Baker (2002:54), if capital structure is irrelevant in a perfect market, then imperfections which exist in the real world must be the cause of its relevance. The theories below try to address some of these imperfections, by relaxing assumptions made in the Modigliani and Miller model.

The Modigliani-Miller theorem forms the basis for modern thinking on capital structure. The basic theorem states that, in the absence of taxes, bankruptcy costs, and asymmetric information, and in an efficient market, the value of a firm is unaffected by how that firm is financed Modigliani (2003:262).

3.3.2.1 Trade-off Theory

According to Baker (2002:57), “the trade-off theory of capital structure refers to the idea that a multinational corporation chooses how much debt finance and how much equity finance to use by balancing the costs and benefits”.

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Baker (2002:58) states that trade-off theory allows the bankruptcy cost to exist. It states that there is an advantage to financing with debt (namely, the tax benefit of debts) and that there is a cost of financing with debt (the bankruptcy costs of debt). The marginal benefit of further increases in debt declines as debt increases, while the marginal cost increases, so that a multinational corporation that is optimizing its overall value will focus on this trade-off when choosing how much debt and equity to use for financing. Empirically, this theory may explain differences in debt/equity ratios between industries, but it doesn't explain differences within the same industry.

3.3.2.2 Pecking Order Theory

According to Baker (2002:58), the pecking order theory tries to capture the costs of asymmetric information. It states that multinational corporations prioritize their sources of financing (from internal financing to equity) according to the law of least effort, or of least resistance, preferring to raise equity as a financing means “of last resort”.

The following outline of the pecking order theory of business financing, is provided by Baker (2002:60):

- Multinational corporations prefer internal financing.
- Multinational corporations adapt their target dividend payout ratios to their investment opportunities, while trying to avoid sudden changes in dividends.
- Sticky dividend policies, plus unpredictable fluctuations in profits and investment opportunities, mean that internally generated cash flows
are sometimes more than capital expenditures and at other times less. If it is more, the firm pays off the debt or invests in marketable securities. If it is less, the firm first draws down its cash balance or sells its marketable securities, rather than reduce dividends.

- If external financing is required, firms issue the safest security first. That is, they start with debt, followed possibly by hybrid securities such as convertible bonds, with equity perhaps as a last resort. In addition, issue costs are lowest for internal funds, low for debt and highest for equity. There is also the negative signalling to the stock market associated with issuing equity, positive signalling associated with debt.

**3.3.2.3 Agency Costs**

Baker (2002:63) states that there are three types of agency costs, which can help explain the relevance of capital structure.

**Asset substitution effect:** As debt / equity increases, management has an increased incentive to undertake risky (even negative net present value) projects. This is because if the project is successful, shareholders get all the upside, whereas if it is unsuccessful, debt holders get all the downside. If the projects are undertaken, there is a chance of firm value decreasing and a wealth transfer from debt holders to shareholders.

**Under-investment problem:** If debt is risky (e.g. in a growth company), the gain from the project will accrue to debt holders rather than shareholders. Thus, management has an incentive to reject positive net
present value projects, even though they have the potential to increase firm value.

**Free cash flows:** Unless free cash flows are given back to investors, management has an incentive to destroy firm value through empire building and perks. Increasing leverage imposes financial discipline on management.

### 3.3.2.4 Other

Baker (2002:65) states other theories that attempt to explain these imperfections that are based on the Modigliani-Miller model, include the following:

- The neutral mutation hypothesis - firms fall into various habits of financing, which do not impact on value.
- Market timing hypothesis - capital structure is the outcome of the historical cumulative timing of the market by managers (Lyandres.2007: 234).
- Accelerated investment effect - even in absence of agency costs, levered firms used to invest faster because of the existence of default risk(Baker.2002:66)

### 3.3.3 Arbitrage

Baker (2002:67) states that a capital-structure arbitrageur seeks opportunities created by differential pricing of various instruments and issued by one corporation. Consider, for example, traditional bonds and
convertible bonds. The latter are bonds that are, under contracted-for conditions, convertible into shares of equity. The stock-option component of a convertible bond has a calculable value in itself. The value of the whole instrument should be the value of the traditional bonds plus the extra value of the option feature.

3.4 CAPITAL BUDGETING METHODS

Capital budgeting is concerned with the process of producing, evaluating, selecting and controlling capital expenditures. In this context, capital budgeting decisions are critical. Winning projects typically produce positive cash flows for a long period of time, while failing projects do not return enough cash flows to justify the investment.

Capital budgeting methods deal with sizeable investment in long-lived projects and rate of return. Cash flows of a project are spread over many years, so large sums of money are invested in the first year and net operating cash flows are received over a number of years. At the termination of the project, terminal cash flows are realized. An important part of capital budgeting methods is there for calculating cash inflows and outflows and rate of return for accepting or rejecting projects. To illustrate the techniques, the study assumes a firm is considering investing in a project that has the following cash flows:

<table>
<thead>
<tr>
<th>Year (t)</th>
<th>Expected After-Tax Net Cash Flows, R</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(5,000)</td>
</tr>
<tr>
<td>1</td>
<td>800</td>
</tr>
<tr>
<td>2</td>
<td>900</td>
</tr>
</tbody>
</table>
\[ CF = \text{R} \ (5,000) \]

to purchase the asset—the parentheses indicate that the cash flow is negative. If the firm’s required rate of return is 12 percent, the cash flow time line for the asset is:

\[
\begin{array}{ccccccc}
0 & 1 & 2 & 3 & 4 & 5 \\
(5,000.00) & 800 & 900 & 1,500 & 1,200 & 3,200 \\
714.29 & 717.47 & 1,067.67 & 762.62 & 1,815.77 \\
& & & & & 77.82 \\
\end{array}
\]

According to Ivan (2005:231), “the literature on capital budgeting appraisal focuses on relatively unsophisticated methods of evaluating the profitability of investment opportunities before homing in virtues of discounting methods”. The major models of capital budgeting analysis include:

- Payback Period
- Net Present Value
- Profitability Index
- Internal Rate of Return.
3.4.1 Payback Period

According to Ivan (2005:232), the Payback Period represents the amount of time that it takes for a capital budgeting project to recover its initial cost. The use of the Payback Period as a Capital Budgeting decision rule specifies that all independent projects with a Payback Period less than a specified number of years should be accepted. The following table shows the payback for this project:

<table>
<thead>
<tr>
<th>Year</th>
<th>Cash Flow (CF)</th>
<th>Cumulative CF</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>R (5,000)</td>
<td>R (5,000)</td>
</tr>
<tr>
<td>1</td>
<td>800</td>
<td>(4,200)</td>
</tr>
<tr>
<td>2</td>
<td>900</td>
<td>(3,300)</td>
</tr>
<tr>
<td>3</td>
<td>1,500</td>
<td>(1,800)</td>
</tr>
<tr>
<td>4</td>
<td>1,200</td>
<td>(600)</td>
</tr>
<tr>
<td>5</td>
<td>3,200</td>
<td>2600</td>
</tr>
</tbody>
</table>

The Payback Period can be computed using the following equation:

\[
\text{Payback Period} = \text{Last year with a negative NCF} + \left( \frac{\text{Absolute Value of NCF in that year}}{\text{Total Cash flow in the following year}} \right)
\]

\[
= 4 + \frac{600}{3200}
\]

\[
= 4.19 \text{ years}
\]

NCF- Net Cash Flow

As the computation shows, it takes a little more than four years for the firm to recapture its original investment for this project. The acceptance rule for payback can be stated as follows:
Accept the project if Payback, PB < some number of years set by the firm

This project would be acceptable if the firm wants to recapture its investments’ costs within five years, but it would not be acceptable if the firm wants to recapture the costs within three years.

**The Advantages of the Payback Period:**

- Decision-makers understand information presented to them.
- Calculations are straightforward and likely to be error-free.
- Since data is in itself unreliable (estimates of future cash flows) sophisticated analysis may not be justified.

**The Disadvantages of the Payback Period:**

- All cash flows within the payback period are given equal weight.
- Cash flows outside the payback period are ignored.
- It is not easy to determine how long the payback period should be.

### 3.4.2 Net Present Value

According to Ivan (2005:233), the time value of money is considered important when evaluating projects with different costs, different cash flows and different service lives. Discounted cash flow techniques, such as the net present value method, consider the timing and amount of cash flows. To use the net present value method, you will need to know the cash inflows, the cash outflows, and the company's required rate of return on its investments. The required rate of return becomes
the discount rate used in the net present value calculation. For the following examples, it is assumed that cash flows are received at the end of the period. For example, if the NPV of a project is R1,000, then the value of the firm should increase by R1,000 today. Thus, a project is acceptable if its NPV is positive. If a project has a positive NPV, then it generates a return that is greater than the cost of the funds that are used to purchase the project.

The NPV computation is:

$$NPV = \sum_{t=0}^{N} \frac{C_t}{(1+r)^t}$$

Where

- $t$ = the time of the cash flow
- $N$ = the total time of the project
- $r$ = the discount rate (the rate of return that could be earned on an investment in the financial markets with similar risk)
- $C_t$ = the net cash flow (the amount of cash) at the time
- $C_0$ is commonly placed to the left of the sum to emphasize its role as the initial investment.

**Decision Rules**

- If projects are independent, accept the project if $NPV > 0$.
- If projects are mutually exclusive, accept projects with the highest positive NPV - those that add the most value.
The NPV for the project in above example is:

\[
\text{NPV} = -R5,000 + \frac{R800}{1.12^1} + \frac{R900}{1.12^2} + \frac{R1,500}{1.12^3} + \frac{R1,200}{1.12^4} + \frac{R3.200}{1.12^5}
\]

= R77.82

The result of this computation is the same as that given in the cash flow time line diagram. According to the acceptance criterion, the project in our example should be purchased. Remember that if the firm accepts a project with a positive NPV its value should increase, and vice versa. Therefore, if the project had a negative NPV it would not be acceptable because such a project would decrease the value of the firm.

Net Present Value analysis relies upon an evaluation of cash flows resulting from a project. There are four basic rules for calculating net cash flows:

- Use inflows and outflows of cash when they occur - do not use accounting variables
- Use after-tax net cash flows
- Discount after-tax cash flows at the after-tax interest rate
- Identify all real options and include in project evaluation

NPV technique is the academic recommendation and it is theoretically sound. The drawback of NPV is that the decision-maker must judge a project by an absolute number.
3.4.3 Profitability Index

According to Ivan (2005:233), profitability index is also known as Profit Investment Ratio, abbreviated to P.I., and Value Investment Ratio is abbreviated to V.I.R. Profitability index is a good tool for ranking projects because it allows you to identify clearly the amount of value created per unit of investment, thus if you are capital-constrained you would first wish to invest in those projects which create value most efficiently.

Profitability index identifies the relationship of investment to payoff of a proposed project. The ratio is calculated as follows:

\[
\text{Profitability index} = \frac{\text{PV of future cash flows}}{\text{PV of initial investment}}
\]

Decision Rules

- If projects are independent, accept if the project PI > 1.
- If projects are mutually exclusive, accept projects with the highest PI greater than 1 - those that add the most value.

For example, given:

- Investment = 40,000
- life of the Machine = 5 Years

<table>
<thead>
<tr>
<th>Year</th>
<th>Cash Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18,000</td>
</tr>
<tr>
<td>2</td>
<td>12,000</td>
</tr>
<tr>
<td>3</td>
<td>10,000</td>
</tr>
<tr>
<td>4</td>
<td>9,000</td>
</tr>
<tr>
<td>5</td>
<td>6,000</td>
</tr>
</tbody>
</table>
Calculate PI at 10%:

<table>
<thead>
<tr>
<th>Year</th>
<th>Cash Flow</th>
<th>PV@10%</th>
<th>PV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18,000</td>
<td>0.909</td>
<td>16,362</td>
</tr>
<tr>
<td>2</td>
<td>12,000</td>
<td>0.827</td>
<td>9,924</td>
</tr>
<tr>
<td>3</td>
<td>10,000</td>
<td>0.752</td>
<td>7,520</td>
</tr>
<tr>
<td>4</td>
<td>9,000</td>
<td>0.683</td>
<td>6147</td>
</tr>
<tr>
<td>5</td>
<td>6,000</td>
<td>0.621</td>
<td>3726</td>
</tr>
<tr>
<td></td>
<td><strong>Total present value</strong></td>
<td></td>
<td><strong>43679</strong></td>
</tr>
</tbody>
</table>

\[ PI = \frac{43679}{40000} = 1.091 > 1 \]

Accept the project

Although the profitability index has some advantages for capital budgeting analysis, its results are inconsistent with the maximization of shareholder wealth and it should not be used. Indeed, concept of capital rationing gives results inconsistent with the maximization of shareholder wealth. It is hard to believe that a firm with positive NPV projects cannot go out to the capital market and borrow the required funds to finance these projects.

3.4.4 Internal Rate of Return

According to Ivan (2005:234), an alternative approach, based on discounting principles, is the internal rate of return – that discount rate at which net present value of projects is zero. The IRR has one strong attraction: it provides a rate of return which is easier to interpret than the
net present value. Hence, internal rate of return is essential for capital budgeting analysis.

The IRR computation is:

\[
NPV = CF_0 + \frac{\hat{CF}_1}{(1 + IRR)^1} + \frac{\hat{CF}_2}{(1 + IRR)^2} + \cdots + \frac{\hat{CF}_n}{(1 + IRR)^n} = 0
\]

\[
CF_0 = \frac{\hat{CF}_1}{(1 + IRR)^1} + \frac{\hat{CF}_2}{(1 + IRR)^2} + \cdots + \frac{\hat{CF}_n}{(1 + IRR)^n}
\]

In determining whether to accept or reject a particular project, the IRR decision rule is:

- Accept a project if IRR > \( r_p \)
- Reject a project if IRR < \( r_p \)
- Indifferent if IRR = \( r_p \)
- For mutually exclusive projects accept the project with the highest IRR if the IRR > \( r_p \).

Where \( r_p \) is the required return on the project, this study illustrates the use of the IRR rule.

The IRR for above project is:

\[
NPV = -R\ 5,000 + \frac{R\ 800}{(1 + IRR)^1} + \frac{R\ 900}{(1 + IRR)^1} + \frac{R\ 1,500}{(1 + IRR)^1} + \frac{R\ 1,200}{(1 + IRR)^1} + \frac{R\ 3,200}{(1 + IRR)^1}
\]

IRR = 12.5%
A project is acceptable using IRR if its IRR is greater than the firm’s required rate of return—that is, IRR > r. Remember that the IRR represents the rate of return the firm will earn if the project is purchased. So, simply stated, the project must earn a return that is greater than the cost of the funds used to purchase it. In the example, IRR = 12.5%, which is greater than r = 12%, so the project is acceptable.

According to Ivan (2005:236), the internal rate of return method has a number of potential difficulties as outlined in the examples below:

- Timing of inflow and outflow
- Ambiguous results
- Scale of investment.

**Timing of inflow and outflow**: the internal rate of return (IRR) rule fails in some cases when multinational corporations consider two proposals by the net present value (NPV) and the internal rate of return (IRR), because it ignores the ordering of the inflows and outflows.

**Ambiguous Results**: Another problem of the internal rate of return (IRR) rule is that there can be multiple internal rates of return. For every change in sign of the cash flows through time, there can be an additional internal rate of return.

**Scale of Investment**: Multinational corporations cannot achieve infinite resources, so it must make choices. For example, a multinational manager is considering the purchase of one of two machines. The machine will be installed in the multinational corporation’s factory and will
produce items for sale. Both machines take exactly the same input and produce exactly the same final product. The only difference between the machines is that one is more efficient and, therefore, has lower operating costs, resulting in higher net cash flows.

Because the internal rate of return has no obvious shortcomings, it is suitable for decision-makers, after considering these drawbacks and finding methods. They have common and conflicting functions for making decisions.

3.4.5 Modified Internal Rate of Return

According to Ivan (2005:236), the Modified Internal Rate of Return (MIRR) is a financial measure used to determine the attractiveness of an investment. It is generally used as part of a capital budgeting process to rank various alternative choices. As the name implies, MIRR is a modification of the Internal Rate of Return (IRR).

\[
\sum_{t=0}^{n} \frac{COF_t}{(1 + r)^t} = \frac{\sum_{t=0}^{n} CIF_t (1 + r)^{n-t}}{(1 + MIRR)^n}
\]

COF = cash outflows
CIF = cash inflows
\( r \) = required rate of return
\( n \) = the life of the project
**Decision Rules**

- If projects are independent, accept if the project MIRR exceeds the hurdle rate.

- If projects are mutually exclusive, accept projects with the highest positive MIRR, those that add the most value.

Example:

<table>
<thead>
<tr>
<th>Year</th>
<th>Project A</th>
<th>Project B</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(7,000)</td>
<td>(8,000)</td>
</tr>
<tr>
<td>1</td>
<td>2,000</td>
<td>6,000</td>
</tr>
<tr>
<td>2</td>
<td>1,000</td>
<td>3,000</td>
</tr>
<tr>
<td>3</td>
<td>5,000</td>
<td>1,000</td>
</tr>
<tr>
<td>4</td>
<td>3,000</td>
<td>500</td>
</tr>
</tbody>
</table>

Following are the results of solving for NPV, IRR, and discounted payback:

<table>
<thead>
<tr>
<th></th>
<th>Asset A</th>
<th>Asset B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional PB</td>
<td>2.80 yrs</td>
<td>1.67 yrs</td>
</tr>
<tr>
<td>Discounted PB</td>
<td>3.71 yrs</td>
<td>2.78 yrs</td>
</tr>
<tr>
<td>NPV</td>
<td>R498.12</td>
<td>R429.22</td>
</tr>
<tr>
<td>IRR</td>
<td>18.02%</td>
<td>19.03%</td>
</tr>
</tbody>
</table>

Underlines represent the asset with the better results. A ranking conflict exists.

Computing the MIRRs, this study has

\[
7,000 = \frac{2,000(1.15)^3 + 1,000(1.15)^2 + 5,000(1.15)^1 + 3,000(1.15)^0}{(1 + \text{MIRR}_A)} = \frac{13,114.25}{(1 + \text{MIRR}_A)}
\]
Calculator solution: N = 4, PV = -7,000, PMT = 0, FV = 13,114.25; I/Y = 16.99 = MIRR_A

\[
8,000 = \frac{6.000(1.15)^3 + 3.000(1.15)^2 + 1.000(1.15)^1 + 500(1.15)^0}{(1 + MIRR_B)} = \frac{14,742.75}{(1 + MIRR_B)}
\]

Calculator solution: N = 4, PV = -8,000, PMT = 0, FV = 14,742.75; I/Y = 16.51 = MIRR_B

MIRR_A > MIRR_B, which indicates that Project A is preferable.

3.5 EXCHANGE RATE DETERMINATION

According to Toshiki (2006:346), since the international business environment is one in which there is no universal medium of exchange, exchange rates are a matter of necessity for international trade. As a result, when transactions are denominated in foreign currencies, two basic needs arise. Firstly, there is the need for translation. That is, the transaction that is stated in terms of a foreign currency must be re-expressed or restated in terms of the local currency before it can be recorded in the local accounting records. Secondly, settlement of the transaction requires conversion. This means that when payment is due, a sufficient amount of the local currency must be exchanged for the stated amount of foreign currency so that payment can be made.

According to Toshiki (2006:346), an exchange rate has been defined as a relative price of two national monies. More specifically, it can be stated that the exchange rate is "the ratio between a unit of one currency and the amount of another currency for which that unit can be exchanged at a
particular time." As such, it can be seen that exchange rates are designed to facilitate the actual exchange of one currency for another.

Toshiki (2006:231) states that theory of exchange rate determination can be explained using different approaches. In the following section this study has dealt with some of them.

3.5.1 Purchasing Power Parity

According to Toshiki (2006:347), the purchasing power parity (PPP) happens to be one of the most significant approaches to determine the exchange rate. The purchasing power parity is primarily based on the “Law of One Price”. However, this law is based on the assumption that identical goods are sold at equal prices.

\[ p_t = \frac{p^*_t}{e_t} \]

This is the absolute purchasing power parity approach. Where \( p \) represents domestic prices, \( p^* \) refers to foreign prices and \( e \) is the exchange rate.

There is also the relative purchasing power parity approach. It is the same model but applied to differences: the change in the exchange rate will compensate for inflation differentials.

\[ 1 + \pi_t = (1 + \pi^*_t) (1 + e_\pi_t) \]
where \( \pi \) \( \pi^* \) and \( e^* \) represent domestic inflation, foreign inflation and the depreciation.

It is a flow model of the balance of payment. This law lays down that an exchange rate of currencies has to compensate for the differences in prices of goods. The Relative PPP approach continues to be applied to date. This approach lays down the fact that the exchange rate has to compensate for the difference in the inflation rate. The theory behind purchasing power parity is very appealing. However, when taken to the data, the multinational corporation usually does not find PPP to hold in the long run.

According to Toshiki (2006), there are several important reasons for purchasing power parity not holding in the long run:

- The law of one price might not hold in the short run. The law of one price requires a perfect arbitrage in goods. This means that individuals should be able to import and export any products that are identical and have different prices across countries. This is hardly a good assumption in the short run. In addition, the fact that domestic markets are relatively oligopolistic in the short run, implies that prices will indeed differ. The real world is closer to one in which good segmentation is relevant, both in the decision of production and pricing.

- Purchasing power parity assumes that there is no government intervention.

- Purchasing power parity might not even hold in the long run.
• There is an important component of non-tradable goods, and productivity differentials in those sectors might be different across countries. This implies that there is a permanent change in the price level across countries that should not be compensated by the exchange rate.

• Taste might change, and thus the real exchange rate.

• Market structures might change, and thus the equilibrium exchange rate.

Indeed, there are few cases in which purchasing power parity holds in the short run. When it does hold, it is usually in economies with very high inflation rates (mostly hyperinflation) where domestic currency has no meaning in the determination of prices, and the agents tend to dollarize their economies.

3.5.2 Balance of Payments Approach

According to Toshiki (2006:348), this approach is mainly the dependent economy. The idea is that there exists an exchange rate with internal and external equilibrium.

According to Toshiki (2006:348), the internal equilibrium assumes that there is full employment; unemployment is in the natural rate of unemployment. Or in other words, the unemployment is such that there are no pressures to change real wages.

The external equilibrium refers to equilibrium in the balance of payments. Sometimes, people look at the current account instead of the balance of payments.
This is indeed a wonderful theory. It can explain permanent deviations of the purchasing power parity, but also explain purchasing power parity if so required.

According to Toshiki (2006:348), the main problem with this approach is that in general it is extremely difficult to determine what is the exact natural rate of unemployment, or the exchange rate consistent with an equilibrium in the external accounts. Multinational corporations tend to think that this is a good guess of the long run exchange rate. This model will determine where the exchange rate has to converge to; however, it provides very little guidance regarding the short term fluctuations.

### 3.5.3 Monetary and Portfolio Approaches

According to Toshiki (2006:349), this is an asset-pricing view of the exchange rate. The idea is that agents have a portfolio choice decision between domestic and foreign assets. Those instruments (either money or bonds) have an expected return that could be arbitraged. This arbitrage opportunity is what determines the process of the exchange rate.

In its simplest form, this approach implies the uncovered interest rate parity.

\[
1 + i_t = \left(1 + i_t^*\right)\left(1 + E\hat{e}_t\right)
\]

Where the idea is that if the expected depreciation does not compensate for the interest rate differentials, agents would have arbitrage opportunities.
3.6 CONCLUSION

In this chapter, an overview of the literature studied in capital budgeting analysis for the multinational corporation has been provided to accept or reject a foreign project. The calculation of cash flows is crucial to achieve the result of capital budgeting appraisal and accept or reject foreign projects. Firstly, the concept of cash flows was introduced and the characteristics of cash flows, such as the importance of cash flows, elements of cash flows, incremental cash flows, parent and project cash flows, were identified to understand what the multinational capital appraisal should focus on.

Secondly, this chapter focused on capital structure that explores the situations under which capital structure is irrelevant to a firm's operations. Examining these situations will allow us to explore how the following factors influence a firm's capital structure.

Thirdly, the capital budgeting methods (NPV, PI, PP and IRR) were introduced to help the multinational corporation select the most suitable method. At the same time, the exchange rate was introduced to evaluate and control the impact of exchange rate changes and inflation.

In Chapter 4, the risks, focused on by the multinational corporations, will be introduced to build risk-management consciousness.
4.1 INTRODUCTION

Having gained an understanding of the fundamental analysis and technical analysis tools available for multinational corporations’ investment, this chapter will focus on the risks that multinational corporations face regarding capital budgeting decisions. An important part of multinational capital budgeting is to provide sound advice for multinational corporations to forecast and eliminate risks.

This chapter will introduce risks that are crucial to understand how multinational corporations deal with economic and market environments. It will also illustrate major risks that include considerations of the macroeconomic factors likely to influence investment decisions.

4.2 RISKS

Musiela (2001:75) states that risks are the degree of uncertainty. When the multinational corporation estimates what it costs to invest in a given project and what its benefits will be in future, the multinational corporation is coping with uncertainty. Uncertainty arises from different sources, depending on the type of investment being considered. Musiela (2001:77) points out that uncertainty may be due to:
• Economic conditions - Will consumers be spending or saving? Will the economy be in a recession? Will the government stimulate spending? Will there be inflation?

• Market conditions - Is the market competitive? How long does it take competitors to enter into the market? Are there any barriers, such as patents or trademarks that will keep competitors away? Is there sufficient supply of raw materials and labour? How much will raw materials and labour cost in the future?

• Taxes - What will tax rates be?

• Interest rates - What will be the cost of raising capital in future years?

• International conditional conditions - Will the exchange rate between the currencies of different countries change? Are the governments of the countries in which the multinational corporation does business stable?

These sources of uncertainty influence future cash flows to evaluate and select among projects that will maximize the multinational corporation’s wealth.

4.3 KINDS OF RISKS

A multinational corporation will face up to many risks, some of which are endemic to all firms and others which are unique to multinational organizations. Pamela (2002:68) divides the risk of the multinational corporation into seven broad categories:

• Corporate risk
• International risk
Stand-alone risk

Competitive risk

Market risk

Project specific risk

Industry specific risk

Corporate (within-firm) risk - According to Pamela (2002:68), corporate (within-firm) risk determines how a capital budgeting project is related to the existing assets of the multinational corporation. If the multinational corporation wants to diversify its risk, it will try to invest in projects that are negatively related (or have little relationship) to the existing assets. If a multinational corporation can reduce its overall risk, then it generally becomes more stable and its required rate of return decreases.

International risk - According to Pamela (2002:68), international risk is specifically concerned with the risks associated with international market expansion. Risks that exist in international markets can be divided into two major groups:

Economic risk

- Risk of insolvency of the buyer
- Risk of protracted default - the failure of the buyer to pay the amount due within six months after the due date
- Risk of non-acceptance
- Surrendering economic sovereignty
- Risk of exchange rate
- Susceptibility to changing standards and regulations within other
Political risk

- Risk of cancellation or non-renewal of export or import licenses
- War risks
- Risk of expropriation or confiscation of the importer's company
- Risk of the imposition of an import ban after the shipment of the goods
- Transfer risk - imposition of exchange controls by the importer's country or foreign currency shortages
- Surrendering political sovereignty
- Influence of political parties in importer's company
- Relations with other countries.

**Stand-alone risk** - According to Pamela (2002:69), stand-alone risk is the risk that an asset would have if it was a multinational corporation’s only asset and if investors owned only one stock; it is measured by the variability of the asset’s expected returns.

**Competitive risk** - According to Pamela (2002:69), competitive risk is the risk that the earnings and cash flows on a project can be affected by the actions of international competitors.

**Market risk** - According to Pamela (2002:69), market risk reflects the effect on earnings and cash flows of macroeconomic factors that essentially affect all companies.

**Industry-specific risk** - According to Pamela (2002:69), industry-specific
risk covers factors that primarily impact on the earnings and cash flows of a specific industry.

**Project-specific risk** - According to Pamela (2002:69), project-specific risk is an individual project that may have higher or lower cash flows than expected.

### 4.4 ATTITUDES TOWARD RISKS ON PROJECTS

Hall (2004: 234) states that different multinational corporations have different attitudes toward risks on projects. Risks can be understood in a number of different ways:

- Risks as a hazard or threat
- Risks as uncertainty
- Risks as opportunity.

#### 4.4.1 Risks as Hazard or Threat

According to Hall (2004: 234), risks as a hazard are what multinational corporations most often consider when they invest in foreign projects. Managing risks in this context means using capital budgeting to reduce or eliminate the negative event in the project. Risks as a hazard are a concern of those responsible for conformance:

- Financial controllers
- Internal auditors
- Insurance specialists.
4.4.2 Risks as Uncertainty

According to Hall (2004: 234), risks as uncertainty are the notions referring to the distribution of all possible outcomes, both positive and negative. Managing risks in this context means reducing the variance between anticipated and actual outcomes. Risks as uncertainty concern chief financial officers and line managers responsible for operations.

4.4.3 Risks as Opportunity

According to Hall (2004: 234), the greater the risk, the greater the return, so risks as opportunity accept that there is a relationship between risk and return. Managing risks in this context means using capital budgeting to maximize the upside while minimizing the downside. Risks as opportunity are the concern of senior managers and capital budgeting planners.

4.5 METHODS FOR EVALUATING RISK IN CAPITAL BUDGETING

Wikipedia (2008:566) states that discrete event tools have been widely used in the construction of multinational corporations in order to plan processes, allocate resources, and detect conflicts. Different techniques have been developed to model and analyse construction processes and to help decision-makers. There are some tools that can be used to evaluate total risk:

- Sensitivity Analysis
- Scenario Analysis
- Break-Even Analysis
4.5.1 Sensitivity Analysis

Wikipedia (2008:567) states that “sensitivity analysis is the evaluation of the project under various scenarios in which selected variables are stepped through their pessimistic, likely and optimistic values”.

In this analysis, only one variable at a time is changed. The resulting set of net present values for the foreign project will show management of which variables have material impact on the financial outcome.

According to Wikipedia (2008:567), the steps in the analysis are:

- Calculate the project’s net present value using the most likely value estimated for each variable.
- Select from the set of uncertain variables those which management believes may have an important bearing on predicted project performance.
- Forecast pessimistic, most likely and optimistic values for each of these variables over the life of the foreign project.
- Recalculate the project’s net present value for each of the three levels of each variable. While each particular variable is stepped through each of its three values, all variables are held at their most likely values.
- Calculate the change in net present value for the pessimistic to optimistic range of each variable.
- Identify the sensitive variables.
4.5.2 Scenario Analysis

According to Wikipedia (2008:568), “scenario analysis is a process of analyzing possible future events by considering alternative possible outcomes (scenarios)”. Hall (2004: 23) points out that the analysis is designed to allow improved decision-making by allowing consideration of outcomes and their implications.

According to Hall (2004: 24), scenario analysis computes outcomes using various circumstances, or scenarios. Often multinational corporations will compute the net present value methods of a project using the normal, or most likely, situation, a conservative, or worst-case, situation, and an optimistic, or best-case, situation. After determining the net present value methods, a probability is assigned to each scenario, and the expected net present value method and standard deviation of the net present value method are computed.

Scenario analysis is an important tool of asset-liability management. However, Wikipedia (2008:568) states that scenario analysis has several shortcomings.

- It only addresses risk due to the specific scenarios considered. Furthermore, there is always a risk that scenarios don’t consider a long enough horizon.

- Scenario analysis is highly dependent on assumptions. Assumptions must be made about the impact of a flattening term structure on a bank’s business lines or the response of management to a decline in
demand deposits. Output of the analysis is only as good as these assumptions. The more elaborate the scenario analysis, the more assumptions that must be made.

- Output of scenario analysis tends to be cumbersome - multiple tables summarizing results as opposed to, say, the single number that is duration.

4.5.3 Break-even Analysis

According to Wikipedia (2008:568), break-even analysis is a special application of sensitivity analysis. It aims at finding the value of individual variables at which the project’s net present value method is zero. In common with sensitivity analysis, variables selected for the break-even analysis can be tested only one at a time.

In using break-even analysis, it is important to remember the problem associated with sensitivity analysis as well as to the method (Wikipedia, 2008:568):

- Variables are often interdependent, which makes examining them each individually unrealistic.
- Often the assumptions upon which the analysis is based are made by using past experience / data which may not hold in the future.
- Variables have been adjusted one by one; however, it is unlikely that in the life of the project only one variable will change until reaching the break-even point. Management decisions made by observing the behaviour of only one variable are most likely to be invalid.
• Break-even analysis is a pessimistic approach by essence. The figures shall be used only as a line of defence in the project analysis.

4.5.4 Simulation Methods

According to Wikipedia (2008:569), simulation methods consist of a number of disparate concepts and techniques, with different terminologies adopted by different disciplines. The essence of simulation is the development of a model to represent a real system, followed by the performance of experiments using this model to gain an understanding of how the real system would behave under a variety of circumstances.

The following is a workable classification:

- Identification of the problem
- Analysis of the system
- System synthesis
- Programming the model on a computer
- Testing the model
- Experimentation with the model
- Interpretation of results, and reporting to the relevant authority.

**Identification of the problem** - It is most important to identify clearly the study objectives in terms of the research or managerial problem which is being examined. The nature of the model to be developed will depend on the problem to be analysed. For example:

- Is the objective to understand the system?
• Who is responsible for the system?
• What are their goals?
• What is wrong with present policies?

**Analysis of the system** - After the problem is identified, the system analysis stage can be performed, in which the boundaries of the system, the relevant variables and interrelationships are identified. This may involve drawing various charts or diagrams of the system.

**System synthesis** - This consists of expressing the relationships between variables in symbolic form and estimating the parameters of these relationships.

**Programming the model on a computer** - Once a prototype version of the model has been constructed, computer programming can commence, using a spreadsheet package.

**Testing the model** - After programming the model on a computer the multinational corporation needs to test the model for achieving sufficient confidence.

**Experimentation with the model** - Once sufficient confidence has been gained in a model, a variety of simulation experiments may be conducted. Typically, these experiments provide predications of the performance variables, for various levels of one or more decision variables.

**Interpretation of results and reporting to the relevant authority** - Simulation experiments often generate large volumes of information, and
this output must be distilled and interpreted to a form usable by managers to assist their decision-making.

4.6 CONCLUSION

To help mitigate risks, make sure to put in place a pro-active series of steps that will reduce the likelihood of one of these problems creating a massive business nightmare for multinational corporations.

Multinational Corporate Risk Management analyses, compares and contrasts tools and techniques used in risk management at corporate, strategic business and project levels and develops a risk management mechanism for the sequencing of risk assessment through corporate, strategic and project stages of an investment in order to meet the requirements of the international market.

By classifying and categorizing risk within these levels, readers will learn how to drill down and roll-up to any level of the organizational structure, establish the risks that each project is most sensitive to, and implement the appropriate risk response strategy - to the benefit of all stakeholders.
CHAPTER FIVE

5.1 INTRODUCTION

The main problem identified in Chapter One was to assess “how is capital budgeting used by multinational corporations?” In order to solve the main problem, the following sub-problems should be addressed:

- What are the differences between domestic and multinational corporations in capital budgeting?
- How do multinational corporations control cost and determine final costs?
- What are the constructions of capital budgeting in multinational corporations?
- How do the multinational corporations provide estimates for the firm’s cash flow?
- Which methods will the multinational corporations choose for forecasting the international market?
- What are the major risks that multinational corporations face in their capital budgeting activities?

The aim of this chapter is to highlight the process followed in order to solve the main problems and sub-problems identified. The research methodology and design are examined.
5.2 RESEARCH APPROACH

According to Leedy (2005:20), the appropriate types of research design can “ensure” that the data collected and analysed will help to resolve the research problem and will improve the “effective” level of marketing research. The research design of financial researches can be identified by using one of three types of the research design, namely, exploratory research, descriptive research and causal research. These types of research design are described as follows:

Exploratory research - This research is used when one is seeking insights into the general nature of a problem, the possible decision alternatives and the relevant variables that need to be considered. The research methods are highly flexible, unstructured and qualitative, as the researcher begins without a firm preconception as to what will be found. The absence of structure permits a thorough pursuit of interesting ideas and clues about the problem situation.

Descriptive research - In this research, hypotheses often will exist, but they may be tentative and speculative. In general, the relationships studied will not be causal in nature. However, they may still have utility in prediction.

Causal research - When it is necessary to show that one variable causes or determines the values of another variable, causal research must be used.
This study will be both descriptive and explanatory. From a descriptive point of view, the thesis will identify the value of capital budgeting in multinational companies. However, the explanatory approach will be used when the study explains how capital budgeting has contributed towards the development of multinational corporations.

5.3 ABDUCTION, DEDUCTIO AND INDUCTION METHODS

There are three ways in which this research problem can be solved. Leedy (2005:23) has described two methods, the induction and the deduction method.

The inductive approach aims at drawing general conclusions from the observations made. In other words, assumptions are formed according to the observations, which are conducted during an empirical investigation. The deductive method however, uses hypotheses and theories, which then are going to be tested in the empirical world. Leedy (2005:23) suggests that the deductive method can be adopted to generate research topics. This can be conducted by getting ideas from articles, journals, reviews, books, media and the internet to communicate with experts and researchers.

There are advantages and disadvantages in using one or the other approach. For instance, the inductive method depends on the observations, which are carried out during the empirical investigation. However, the question has to be addressed, is to what extent the observational data are reliable and trustworthy. Depending on the observations, assumptions will be drawn. On the other hand, by using the
deduction method, the problem that can occur is the question of validity, when deducing empirical evidence. The point is that the theory can be applied to many different cases at the same time.

Whatever approach is used, it is essential to have a good idea of the conceptual framework, in which the research will be conducted (Remenyi et al., 1998:56).

One of the more common ways to tackle the research problem is to use the abduction method. The abduction method moves between the empirical world and the theoretical world. Throughout the thesis, theories and frameworks, such as the capital budgeting framework, have to be used to analyse the multinational corporation. However, this study must also identify capital budgeting method intangibles, which requires us to make certain “observations” from empirical studies to induce some assumptions. Therefore, the logic of this thesis follows the abduction method, which tries to give a more comprehensive picture of this study.

5.4 DATA COLLECTION

The choice of a data collection method is a critical point in the research process. According to Aggarwal (1980, 45), research projects examine the interface between science and technology, and society often requires the collection of social data. At the start, the most common response from researchers addressing this need for data is to conduct a survey. The decision is seldom easy, for there are many factors to be considered and many variations of the following four basic survey methods.
In this study, data was gathered in two ways: firstly, a literature study was done by making use of the library, internet, trade associations, government sources, company-provided information, news and media sources, market research firms, financial services firms, consulting firms and research distributors. Secondly, e-mail and face-to-face communication were used with managers in the multinational corporation.

5.5 DATA EVALUATION

Leedy (2005.39) states that the researcher’s next task is to make sense of the collected data. Before the researcher can gain an understanding from the collected data, he/she must first examine the raw information (i.e., what was actually collected) to make sure the information exists as required. There are many reasons why data may not be presented in the form needed for further analysis. Some of the reasons include:

- **Incomplete Responses** – This most likely occurs when the method of data collection (e.g., survey) is not fully completed, such as when the person taking part in the research fails to provide all THE required information (e.g., omits questions).
- **Data Entry Error** – This exists when the information is not recorded properly which can occur if the wrong entry has been made (e.g., the entry, which should be choice “B”, is entered as choice “C”) or there is failure of data entry technology (e.g., online connection is disrupted before a full completion of survey).

- **Questionable Entry** – This occurs when there are apparent inconsistencies in responses, such as when a respondent does not appear to be answering honestly.

To address these issues in the study, steps should be taken to “cleanse” the data. These may include omitting problematic data either in part (e.g., excluding a single question) or in full (e.g., abandoning an entire survey).

### 5.6 DATA ANALYSIS

According to Leedy (2005.45), with the data in a form that is now useful, the researcher can begin the process of analysing the data to determine what has been learned. The method used to analyse data depends on the approach used to collect the information. For primary research the selection of method of analysis also depends on the type of research instrument used to collect the information.

Essentially there are two types of methods of analysis – descriptive and inferential.

**Descriptive data analysis** - Not to be confused with descriptive research, descriptive analysis, as the name implies, is used to describe the results
obtained. In most cases results are merely used to provide a summary of what has been gathered (e.g., how many liked or disliked a product) without making a statement of whether the results hold up to statistical evaluation. For quantitative data collection the most common methods used for this basic level of analysis are visual representations, such as charts and tables, and measures of central tendency, including averages (i.e., mean value). For qualitative data collection, where analysis may consist of the researcher’s own interpretation of what was learned, the information may be coded or summarized into grouping categories.

**Inferential data analysis** - While descriptive data analysis can present a picture of results, to be really useful, the results of research should allow the researcher to accomplish other goals, such as:

- Using information obtained from a small group to make judgements about a larger group
- Comparing groups to see if there is a difference in how they respond to an issue
- Forecasting what may happen based on collected information.

Moving beyond simply describing results, requires the use of inferential data analysis where advanced statistical techniques are used to make judgements about some issue. Using inferential data analysis requires a well-structured research plan that follows the scientific method. Also, most (but not all) inferential data analysis techniques require the use of quantitative data collection.
5.7 VALIDITY

To show to what extent this study reflects the measurement which the researcher is intending to measure, it is important to consider which theoretical models the researcher has applied and which data the researcher has collected for this empirical research. “Because a research design is supposed to represent a logical set of statements, you also can judge the quality of any given design according to certain logical tests.” (Remenyi et al, 1998:56).

Leedy (2005:45) concludes that there are four tests which have been commonly used to establish the quality of empirical social work. These are summarized as construct validity, internal validity, external validity and reliability.

5.7.1 Construction of Validity

According to Leedy (2005:45) there are three ways in which one can increase the construction of validity. These are the use of multiple sources of evidence, the establishment of a chain of evidence and the draft of the report reviewed by key informants.

All three methods were used to increase the construction of validity. Questions and answers from the interview were sent to the correspondents to check for errors and for further addition where it was possible. Other people were also asked to proof-read the thesis to see whether it flowed and followed a logical pattern.
5.7.2 Internal Validity

Leedy (2005:45) states that internal validity concerns mainly casual or explanatory case studies. Internal validity should show whether or not the researcher has measured what he is supposed to measure. Therefore it is important that a connection between the empirical world and that of the theoretical world is shown. The task of the thesis is to tell the reader not from a subjective, but from an objective viewpoint. In order to achieve that, the research focus point will be investigated from different perspectives. If this still leads the study to research recommendation, the study will then have fulfilled the internal validity of this researcher’s claim.

5.7.3 External Validity

The test of external validity deals with the problem of knowing, whether the finding of a study is possible to generalize beyond the immediate study. In order to increase our external validity, Leedy (2005:46) suggests that a common way to attain this is by researching through numerous cases. Therefore, the intention of this study is to research the capital budgeting application from the year report in multinational corporations. The study would like to give some findings and apply these findings to make overall conclusions.

5.7.4 Quality of Research Validity

With regard to the research quality, it can be said that the thesis aims to be as transparent as possible. There are ways to ensure that this thesis can be reliable and valid. According to Leedy (2005:47), it is a matter of
how the thesis is designed, how the empirical research is conducted and how analysis and conclusions are carried out. As a matter of fact, the thesis should be traceable, i.e. questions can be asked regarding how the researcher has come to certain conclusions and hence rational answers can be given in order to validate research argumentation.

5.8 RELIABILITY

The objective of reliability is to assure that if at a later date an investigator followed the same procedure as the earlier investigator, conducting the same problem all over again, he or she would come to the same findings (Leedy, 2005:45). Leedy (2005:48) suggests that one way of approaching the problem of reliability is to make many steps as operational as possible. The thesis is delimitated to Chinese multinational companies with different businesses operating in the international market. When interviews were conducted, care was taken to ensure that there were no disturbances so that the interview could be carried out freely. The interviews were conducted in a similar way for all the correspondent companies, following the same interview approach. Questions were formulated in a straightforward way, in order to be easily understood and to avoid any misunderstandings.

5.9 CONCLUSION

In this chapter the methodology was discussed by referring to research design, research strategy, and data analysis. The study analysed theory to determine which methods would best be aligned with the type of research being conducted and the outcomes envisaged.
The Chapter Six will focus on the results of the empirical study will be summarized and analysed.
CHAPTER SIX

6.1 INTRODUCTION

The section of the thesis, which relates to fundamental analysis, sought to ascertain thesis results, such as how capital budgeting applications are used by multinational companies; how multinational companies control cost and determine final costs; how the multinational companies provide estimates for the firm’s cash flow and which capital budgeting methods were applied.

The capital budgeting and capital estimation of multinational corporations are among the most important decisions made by the financial manager. In this process, it is crucial that management of multinational corporations should use capital budgeting that will result in the maximization of shareholder wealth. In this chapter the empirical results are presented and analysed. The presentation begins with vital data for capital budgeting decision methods used by 60 multinational companies.

6.2 SURVEY RESULTS AND STATISTICAL ANALYSIS

Section A: Respondents’ Statistics

In order to understand the usage and importance of capital budgeting techniques, this study asked respondents to tick all relevant techniques as well as rank their importance. In Table 5.1, multinational corporations that were addressed formed a total sample of 124 companies. Of these, 60
sent us responses. The resulting response rate of 48% is high for a survey of this type. One may assume that the high participation rate was due to the strong interest multinational companies take in the problem discussed. This is also reflected by the hierarchical positions of the respondents: about a quarter of the questionnaires were completed by members of financial management and almost all the questionnaires were answered by interrelated respondents.

<table>
<thead>
<tr>
<th>Table 5.1 Response Rate</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undeliverable surveys</td>
<td>10</td>
<td>8.1%</td>
</tr>
<tr>
<td>No response to mail surveys</td>
<td>54</td>
<td>43.5%</td>
</tr>
<tr>
<td>Usable responses</td>
<td>60</td>
<td>48.4%</td>
</tr>
<tr>
<td></td>
<td>124</td>
<td>100%</td>
</tr>
</tbody>
</table>

In Table 5.2, this survey shows that respondents all have tertiary academic qualifications; therefore it can be assumed that they have an appropriate understanding for answering the questionnaire in the survey.

<table>
<thead>
<tr>
<th>Table 5.2 Respondents’ Degree</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor’s Degree</td>
<td>24</td>
<td>40%</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>21</td>
<td>35%</td>
</tr>
<tr>
<td>Doctoral Degree</td>
<td>15</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 5.3, shows the respondents’ positions within the multinational corporations. This indicates that the respondents possess valuable expertise, knowledge and information about multinational corporations and decisions behind capital budgeting and are therefore in a position to
answer the questions set out in the survey. The fact that this survey has managed to get the correct persons to answer the questionnaire is also beneficial for the results.

Table 5.3 Respondents by Multinational Corporations’ Positions

<table>
<thead>
<tr>
<th>Positions</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial manager or director</td>
<td>12</td>
<td>20%</td>
</tr>
<tr>
<td>Treasurer</td>
<td>8</td>
<td>14%</td>
</tr>
<tr>
<td>Chief Executive Officer</td>
<td>20</td>
<td>33%</td>
</tr>
<tr>
<td>Chief Accounting Officer</td>
<td>20</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>

Section B Size of the Capital Budget

Because all the multinational corporations are different, the size of the annual capital budget did vary among the respondents. The size of the capital budget is subdivided as follows:

Table 5.4 Respondents by Size of the Capital Budget

<table>
<thead>
<tr>
<th>Size of Capital Budget</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than R50 million</td>
<td>10</td>
<td>18.3%</td>
</tr>
<tr>
<td>R50 – R100 million</td>
<td>23</td>
<td>37.6%</td>
</tr>
<tr>
<td>R100 – R500 million</td>
<td>10</td>
<td>16.1%</td>
</tr>
<tr>
<td>R500 - R1 billion</td>
<td>14</td>
<td>22.6%</td>
</tr>
<tr>
<td>Greater than R1 billion</td>
<td>3</td>
<td>5.4%</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>
Next, respondents were asked at what level a formal capital budgeting analysis was required. As can be seen in Table 5.5, 98.33% of multinational companies require a formal analysis; however, the minimum capital expenditure for the analysis varied substantially. Therefore, the survey indicates that capital budgeting is one of the most important decisions that face the multinational corporation.

**Table 5.5 Capital Expenditure Required for formal Capital Budgeting Analysis**

<table>
<thead>
<tr>
<th>Amount of Capital Expenditure Required for formal Capital Budgeting process</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than R10,000</td>
<td>13</td>
<td>21.67%</td>
</tr>
<tr>
<td>R10,000 - R99,999</td>
<td>15</td>
<td>25%</td>
</tr>
<tr>
<td>R100,000</td>
<td>17</td>
<td>28.33%</td>
</tr>
<tr>
<td>R500,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greater than R500,000</td>
<td>14</td>
<td>23.33%</td>
</tr>
<tr>
<td>Never</td>
<td>1</td>
<td>1.67%</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Section C: Capital Budget Decisions**

Respondents were asked how frequently they used the five capital budgeting methods: net present value (NPV), profitability index (PI), internal rate of return (IRR), modified internal rate of return (MIRR), and payback. Results of the survey of capital budgeting methods employed by the responding companies are presented in Figure 5.1.
As shown in Figure 5.1, net present value and internal rate of return are the primary methods used to evaluate projects, and 94% of multinational corporations always or almost always use the net present value method, whilst 90% of multinational corporations always or almost always use internal rate of return. 70% of respondents always or almost always use the payback period method to evaluate projects. Therefore, NPV, Payback Period, and IRR are techniques most frequently used by multinational companies participating in the survey. NPV and IRR are the two most popular methods, with over 90% of the companies reporting that they used these techniques.
Most multinational corporations did not rely on a single capital budgeting technique but employed a number of techniques in their evaluation process. Assuming that techniques that ranked moderately important, or higher, are regularly used, 46% of respondents regularly used from one to three techniques, the rest regularly used more than three techniques. Details are shown in Table 5.6.

### Table 5.6 Number of Multinational Corporations Grouped by Number of Techniques Used

<table>
<thead>
<tr>
<th>Number of Techniques Used in Evaluation</th>
<th>Number of Multinational Corporations</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13</td>
<td>21.67%</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>20%</td>
</tr>
<tr>
<td>3</td>
<td>15</td>
<td>25%</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>28.33%</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>

### Table 5.7 Test of Significance of Difference of Importance between Techniques

<table>
<thead>
<tr>
<th>Techniques</th>
<th>Not Applicable</th>
<th>Not Important</th>
<th>Moderately Important</th>
<th>Important</th>
<th>Very Important</th>
<th>Number Of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPV</td>
<td>4%</td>
<td>1%</td>
<td>9%</td>
<td>29%</td>
<td>57%</td>
<td>60</td>
</tr>
<tr>
<td>IRR</td>
<td>19%</td>
<td>1%</td>
<td>16%</td>
<td>34%</td>
<td>30%</td>
<td>57</td>
</tr>
<tr>
<td>MIRR</td>
<td>47%</td>
<td>13%</td>
<td>17%</td>
<td>16%</td>
<td>8%</td>
<td>58</td>
</tr>
<tr>
<td>PI</td>
<td>43%</td>
<td>17%</td>
<td>17%</td>
<td>16%</td>
<td>8%</td>
<td>55</td>
</tr>
<tr>
<td>Payback</td>
<td>20%</td>
<td>15%</td>
<td>25%</td>
<td>23%</td>
<td>17%</td>
<td>53</td>
</tr>
<tr>
<td>Other</td>
<td>65%</td>
<td>0</td>
<td>0</td>
<td>20%</td>
<td>15%</td>
<td>52</td>
</tr>
</tbody>
</table>
The modified internal rate of return (MIRR) makes a specific adjustment to the IRR approach by setting a specific reinvestment rate which addresses a major weakness of the IRR method, namely that the IRR assumes that project cash flows are reinvested at an optimum project ranking (Ward, 2000:89). Bodie, Zane; Alex Kane and Alan J. Marcus (2004:12) point out that the MIRR requires corporations to determine the reinvestment rate, which often is set at the cost of capital of the firm. This results in a more realistic project return, particularly for high IRR projects. The use of the profitability index (PI) may assist in ranking projects in an environment of capital rationing.

The ranking of techniques by importance is presented in Table 5.7, and is similar to the ranking by frequency of use. NPV, IRR, and Payback are at the top of the ranking. The empirical survey shows that a statistically significant consensus exists between respondents on the ranking by order of importance. NPV stands out as the most popular and important technique, with 57% of companies ranking it as the most important technique. Some multinational companies listed “other” techniques which they considered as “very important” in their evaluation.

**SECTION D: CAPITAL BUDGETING STRUCTURE**

In response to factors which determine the capital structure of multinational corporations, participating respondents in the survey provided the following answers (see Figure 5.2):
As shown in Figure 5.2, maintenance of desirable credit rating, debt repayment capability and maintain certain liquidity are respondents within multinational corporations stated to be most important when determining multinational corporations’ capital structure. Respondents also stated other important factors to incorporate when determining the capital structure of the multinational corporation, such as maintaining a satisfactory borrowing reserve, international norms and tax shield considerations. From (Figure 5.2) this survey can see that factors which concern credit rating, debt repayment and liquidity, tend to follow each other, indicating similarities between sample respondents when it comes to concern about uncertainty. Respondents’ concern about debt repayment can be explained by the obligations debt involvement. They have a responsibility not only towards creditors in terms of interest payments and transactions cost, but also against shareholders in terms of financial distress. Debt repayment issues can be connected with the distress of lack of liquidity. Lack of liquidity could make managers
incapable of coping with the debt repayments of multinational corporations. The low support found for tax shield consideration indicates, with regard to the above-mentioned, an unwillingness to exploit debt. Although, this is reasonable due to what seems to be the respondents’ wide concern about credit rating and financial status.

SECTION E: FOREIGN EXCHANGE MANAGEMENT

Given results of previous studies, since the international business environment is one in which there is no universal medium of exchange, the exchange rate is a matter of necessity for international trade. As can be seen in Table 5.8, almost two-thirds of the respondents explain that their firms actively manage their exchange rate determination. 64% of multinational firms restrict themselves to periodic and systematic assessments, and the remaining 9% indicate that they have little or no concern about their transaction exposure. The other two types of exposure, accounting profits and competitive position, are of similar importance: 16% of the respondents actively manage their accounting exposure and 15% do the same for their competitive position. About half of the respondents perform periodic and systematic assessments of each type of exposure and the remainder indicates that they have little or no concern about them.
Multinational corporations have to decide on the degree of centralization of their exchange management function. In a totally decentralized system, each respondent thought that a corporate unit was responsible for managing its own exposure. In a financial management system, risk management is the sole responsibility of the corporate centre. As is shown in the survey, exchange rate forecasts are employed in 60 multinational corporations. This means that the financial respondents of most multinational corporations are able to profit systematically from exchange rate forecasts.
Hedging methods of Multinational corporations' towards foreign exchange determination are summarized in Figure 5.3. 43% of multinational corporations always or almost always use the purchasing power parity, whilst 25% of multinational corporations always or almost always use the balance of payments approach. 11% of respondents always or almost always use the monetary and portfolio approaches. 21% of respondents always or almost always use other forecasting approaches. These results reflect the performance of the exchange rate management in multinational corporations. Although various measures were used here, most multinational corporations still thought that the purchasing power parity theory provides a useful framework from which multinational corporations can estimate the amount of adjustment needed on the exchange rate between countries in order for the exchange to be equivalent to each currency's purchasing power.
Multinational corporations had a more positive view of risks. In the Figure 5.4, 50% of respondents thought that risks had a positive influence on their multinational corporations. This may be because it is easier to address those concerns through good management practices, and because corruption is more likely to have a direct financial impact. 5% of respondents thought that risks had a negative influence on their multinational corporations, and had been put off attractive investments because of concerns about risks. Nevertheless, 45% of respondents still thought risks as uncertainty refer to the distribution of all possible outcomes, both positive and negative.
As can be seen in Figure 5.5, corporate risk is clearly the most important for almost all funds. 87% of respondents considered that it to be their most important risk. Competitive risk gets 80% as either the most important or second most important risk, followed by international risk, with 76% as one of the two most important risks. Stand-alone, market- and project-specific risks are considered much less crucial by most respondents.
As can be seen in Figure 5.6, the total risk is most commonly based on sensitivity analysis and simulation methods in perpetuity (45%). Break-even analysis applied to forecast total risk was used by 35% of multinational companies and 25% of multinational companies used the scenario analysis. However 25% of respondents said they used other tools. From (Figure 5.6), the empirical survey shows that risk assessments can be deliberately performed prior to each phase of project development.

According to Ward (2000:89), for each identified risk, a risk handling strategy is formulated to ensure that necessary actions are being developed and implemented. The method chosen to handle a risk is specific to that risk. There are no universal mitigation strategies except attempting to buy one’s way out of the problem. Handling strategies are intended to either avoid the event or to mitigate (minimize the impact) the event. Risk mitigation can be an active endeavour continually performed
during project development, and estimators must know what risk mitigation strategies are being applied.

6.3 CONCLUSION

The questionnaire responses suggest the following profile for a typical respondent company. Projects will usually be evaluated using NPV or IRR, but multinational corporations are also likely to use other techniques, such as the payback method. There is no dominant method for estimating the growth rate when computing future values, but NPV or IRR are two quite popular choices.

The study investigates the main determinants of capital structure in multinational firms and identifies which incentives lie behind the respondents’ choice of capital structure determinants.

Another issue is the application of the risk concept in practice. This study presents results from a survey of the risk management practices of multinational corporations. The respondents were particularly concerned with corporation risk, competitive risk and international risk.
CHAPTER SEVEN

7.1 INTRODUCTION

Capital budgeting is the part of the budget process that focuses on resource plans for building new facilities, renovating existing facilities, buying major pieces of equipment, or improving the multinational infrastructure.

7.2 OVERVIEW

Chapter one consisted of an explanation of the reasons for the study, its significance and objectives.

Chapter two reviewed the previous literature studied on capital budgeting for multinational corporations, and has provided general capital budgeting perceptions.

Chapter three provided literature studied in capital budgeting analysis for a multinational corporation in deciding whether to accept or reject a foreign project. The calculations of cash flows are crucial to achieve the result of capital budgeting appraisal and to deciding whether to accept or reject foreign projects. Firstly, the concept of cash flows was introduced and the characteristics of cash flows, such as the importance of cash flows, elements of cash flows, incremental cash flows, parent and project cash flows, were identified to understand what the multinational capital appraisal should focus on.
Chapter four provided literature studied on risks that are crucial to understanding how multinational corporations deal with economic and market environments. This chapter illustrates major risks that include consideration of the macro-economic factors likely to influence investment decisions.

Chapter five reported on the methodology used in the research and discussed the appropriateness of using a quantitative method for this study. An e-mail survey with a closed-end questionnaire was used to investigate capital multinational corporations, in order to gain the multiple perspectives of capital budgeting.

Chapters six analysed the data from the e-mail survey, and discussed the research sub-problems identified as critical to exploring the research problem.

7.3 FINDINGS

In chapter six, one question is raised in papermaking context: the 'hardness' and 'softness' of the capital budgeting.

Because of the need to understand the importance of adapting to the present situation, hard capital budgeting is problematic. An inflexible threshold value for the capital spending puts significant pressure on the selection of the investment appraisal method. Poor choice of method or a combination of methods leads to the selection of a weak project with greater probability than in the case of choosing a good one.
Consequently, a hard budget constraint increases the absoluteness of the method; let it be good or bad. (Liesio et al. 2006.60)

The 'softness' of capital budgeting can be divided into two. On the one hand, it may be beneficial for the company to have a 'soft' or 'flexible' capital budgeting (profitable projects are executed). On the other hand, soft constraints may significantly increase the methodological complexity in assessing investment appraisal problems. (Liesio et al. 2006.60)

7.3.1 Robust Portfolio Modeling

Robust Portfolio Modeling (RPM) (Liesio et al. 2006.67) could prove to be helpful when applied to capital allocation problems. RPM is a decision-support methodology for analyzing large-scale multiple criteria project portfolio problems.

The RPM methodology extends the use of preference programming into portfolio problems where a subset of available project candidates is to be financed considering multiple criteria. The additive scoring model is used to model the overall value of each project in a setting of incomplete information. That is, weight coefficients are not to be fixed as precise values, but rather as intervals. Ultimately, RPM builds on the computation of efficient portfolios. A portfolio is efficient (non-dominated), if it is not possible (using existing assets) to compose another portfolio the overall value of which is higher considering the allowed weights and values. The process of RPM is shown in Figure 7.1 (Liesio et al. 2006.68).
Figure 7.1 Robust Portfolio Modeling (source: http://www.rpm.tkk.fi/)
7.3.2 Real Options

Liesio et al (2006.68) states that “'Real options' explores the possibilities that the option-pricing approach offers. Especially considering the non-linearity and the cost of waiting and hedging, real options could provide valuable information in terms of capital budgeting”. When contemplating either new foreign investments or shut-downs (disinvestments) in the new market situation, the need for applying novel approaches in the forest investment setting is imminent. Increased market volatility, the grown probability of technological discontinuity and/or investment shakedown, as well as the role of strategic investments in this context, suggest that a significant source of advantage could reside in 'new investment appraisal methods'.

Liesio et al (2006.68) states that one possibility could be combining RPM and real options approaches. This would take place in the following manner: RPM would be used to identify the core and exterior project candidates. Core projects form the basis of the portfolio, as they are included in all efficient (non-dominated) portfolios. Instead of using RPM methodology in identifying the core projects, other ways could be considered as well. Considering the historical practices in investment appraisal that are being used in multinational corporations, it might prove beneficial to use the traditional capital budgeting methods in conjunction with RPM. Hence, NPV and IRR could be used to identify the core project proposals, thereby paving the way for novel approaches, yet adhering to accustomed practices.
Consequently, the decision maker(s) would have three sets of projects: core, borderline and exterior. Core projects would be executed in any case, but the novelty of this approach lies in the handling of the borderline. The suggested framework is shown in Figure 7.2. In the figure 7.2, on the horizontal axis is the lifetime of an investment. On the vertical axis are the (real) options available for the company.

Figure 7.2 Real Options in Papermaking (source: http://www.rpm.tkk.fi/)
The figure should be interpreted so that interdependent investment proposals can be modeled mathematically. For instance, investment A could represent ‘the procurement of land from the Southern hemisphere'. Consequently, investment B could be 'the start of planting activities', and C 'waiting'. In this case, the investor(s) would have the possibility of allocating uncertainties to the respective investment possibilities. Additionally, what is notable here is that investments such as 'waiting', 'shut-down' etc. are considered as the 'building' investments. In mathematical terms the setting is following:

\[ B \leq A \]
\[ C \leq A \]
\[ B+C \leq 1 \]

This is interpreted so that B and C are only executable in case of the realization of the project A. In addition, both of the two options B and C can either be done or not be done (using the option or not). Considering the ‘real-life’ example of land procurement in the Southern hemisphere, starting planting activities or waiting are examples of real-world options. Identifying investment possibilities using real options is presented here to develop the option-based thinking in capital budgeting. In this model, there is still plenty of room for traditional thinking, in terms of choosing the core set of projects. Nevertheless, a novel approach for assessing investment candidates with higher uncertainty levels is presented here.
7.4 LIMITATIONS

This study was limited in a few ways. First, only 60 multinational companies were included in the study. More data on multinational corporations from less developed countries are necessary to develop a deeper understanding of international capital budgeting and its impact on less developed countries.

Second, although I read the transcripts many times to identify all possible themes, and modified findings based on suggestions and comments from participants after completion of the data analysis process, I still might have missed some cultural nuances affecting capital budgeting that may be apparent to other researchers. Also, some local meanings may be lost in the translation process.

Third, during the interview, a couple of participants particularly mentioned that their companies’ policy is not to publicize their capital budgeting practice, for fear of its “being misread as publicity.” Certain “classified” information was not reported in this study. I am not sure whether more information was held back by these participants, even though some participants sent me supporting documents and reports on capital budgeting and their companies.

7.5 SUGGESTIONS FOR FUTURE RESEARCH

Future research should incorporate new or updated control variables reflecting multinational corporations’ investment rules. These new variables can be drawn from the updates of the capital budgeting survey.
In fact this entire study could be continually updated as the new data on capital budgeting and economic variables becomes available. Explanatory variables should also gain increasing importance of capital budgeting management in investment.

Multinational companies should report how much tax they pay in each country. Often there is no clear answer. However, to some extent this is only part of the analysis. Future research on the determinants of the capital investment should incorporate a measure for those who are uncertain how to comply where their facts are unclear.

Another important issue to consider is equity and stakeholder involvement. Future research on the determinants of the capital spending should incorporate a measure of inclusiveness of various stakeholders in the capital planning process.

7.6 CONCLUSION

Despite limitations discussed in this research, the objectives of this study were met. The research explored factors influencing the decision-making process of multinational corporations. The findings may help marketers in the multinational corporations to choose their financial strategies in the competitive market.
Dear Respondents:

My name is Xin Wang and I am a Master’s student at the Nelson Mandela Metropolitan University conducting a nationwide survey of multinational capital budgeting to gather data for my dissertation. The purpose of the research is to develop a better understanding of how capital budgeting application are used by multinational companies. I would therefore like to draw upon your expertise through participation in this survey.

Your responses are very important to the accuracy of my study. I know that your time is valuable, but I would appreciate it if you would take a few minutes to complete the enclosed questionnaire. I have enclosed a pre-addressed postage-paid reply envelope to help save time.

Again, your completion of the questionnaire is critical to my study and our understanding of participation in the budgetary process. Please complete and return the questionnaire as soon as possible. Your anonymity is guaranteed. Your individual responses cannot be identified. If you would like to obtain the results of the study, please feel free to e-mail me or send a business card in a separate envelope from your questionnaire.

Signature: __________
Data: __________

Thank you in advance for your participation.
A comprehensive survey is conducted to analyse the current practice of multinational capital budgeting, with particular focus on the areas of capital budgeting methods and capital structure. The survey results will enable us to identify aspects of multinational capital budgeting practice that are consistent with finance theory, as well as aspects that are hard to reconcile with what we teach in our business schools today.

Section A: Respondents’ Statistics

The following questions relate to your background and experience. Please answer the following questions in the appropriate spaces.

What is your current age in years?

What is your gender?

☐ Male
☐ Female

What is your current job title?

☐ Financial manager or director
☐ Treasurer
☐ Chief Executive Officer
☐ Chief Operating Officer
What is the highest degree you have earned?

- Bachelor Degree
- Master Degree
- Doctoral Degree

**Section B: Size of the Capital Budget**

What is the size of the capital budget in your organization?

- Less than R50 million
- R50 – R100 million
- R100 – R500 million
- R500 - R1 billion
- Greater than R1 billion

Does your organization engage in formal budgeting processes?

(1=Yes, 2=No)

How much capital expenditure is required for formal capital budgeting process in your organization?

- Less than R10,000
- R10,000 - R99,999
- R100,000 - R500,000
- Greater than R500,000
Never

Do you have a written investment policy?
(1=Yes, 2=No)

Do you currently have organizational charts specifying the responsibilities of each individual and key role?
(1=Yes, 2=No)

**Section C: Capital Budgeting Decisions**

It is a major trend of modern finance theory that the value of an asset (or an entire company) equals the discounted present value of its expected future cash flows. Hence, this survey asked whether companies used any or all of the following evaluation techniques: net present value (NPV), internal rate of return (IRR), discounted payback period, profitability index (PI), and other techniques. The following statements can be answered using a “YES” or “NO”.

<table>
<thead>
<tr>
<th>Does your multinational corporation make use of…</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>……<strong>net present value</strong> (NPV) for contemplating investments?</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>……<strong>internal rate of return</strong> (IRR) for contemplating investments?</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>……<strong>profitability index</strong> (PI) for contemplating investments?</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>..... <strong>payback</strong> for period contemplating investments?</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>…… <strong>other techniques</strong> for contemplating investments?</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>
How many capital budgeting techniques are being used in your company?

1 □ 2 □ 3 □ 4 □ 5 □

In order to understand the usage and importance of capital budgeting techniques this study listed eight different techniques and asked companies to tick all relevant techniques as well as to rank their importance. Five rankings are provided: Not Applicable, Not Important, Moderately Important, Important and Very Important. Respondent companies are considered as using a particular technique if they ticked any of the rankings except for the ‘Not Applicable” box.

<table>
<thead>
<tr>
<th>Which are the factors managers within multinational firms stated to be most important when determining the firm’s capital methods?</th>
<th>N</th>
<th>N</th>
<th>M</th>
<th>I</th>
<th>V</th>
<th>A</th>
<th>I</th>
<th>I</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Present Value (NPV)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Internal Rate of Return (IRR)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Profitability Index (PI)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Modified Internal Rate of Return (MIRR)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Payback Period (PP)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Other</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Section D: Capital Budgeting Structure

The statements below are designed to understand your multinational corporation feelings about the budgetary process in your organization. The following statements can be answered using a seven-point scale with the categories being: 1=Strongly Disagree (SD), 2=Disagree (D), 3=Slightly Disagree (SLD), 4=Neutral (N), 5=Slightly Agree (SLA), 6=Agree (A) and 7=Strongly Agree (SA). Please circle the number that best represents your response.
Which are the factors managers within multinational firms stated to be most important when determining the firm’s capital structure?

<table>
<thead>
<tr>
<th>Factor</th>
<th>SD</th>
<th>DD</th>
<th>SL</th>
<th>NL</th>
<th>SL</th>
<th>LA</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance of desirable credit rating</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Debt repayment capability</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Maintaining a certain liquidity</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Maintaining an satisfactory borrowing reserve</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Tax shield considerations</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>International norms</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Other</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Section E: Foreign Exchange Management

The statements below are designed to understand your multinational corporation feelings about foreign exchange management. Please answer the following questions in the appropriate spaces.

<table>
<thead>
<tr>
<th>Effects of exchange rate changes on ...</th>
<th>No regular assessment or management</th>
<th>Regular assessment</th>
<th>Active management</th>
</tr>
</thead>
<tbody>
<tr>
<td>... accounting profits and owners’ equity</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>... home currency values of foreign currency receivables and payables</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>... competitive position of the firm and on the expected future operational cash flows</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
The statements below are designed to understand risk management in your organization. The following statements can be answered using a “YES” or “NO”.

<table>
<thead>
<tr>
<th>Is your equity investment policy based on</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchasing Power Parity</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Balance of Payments Approach</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Monetary and Portfolio Approaches</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Others?</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

**Section F: Risk Management**

What kind of attitudes do you have towards risks?

- □ Risks as hazard or threat
- □ Risks as uncertainty
- □ Risks as opportunity

The statements below are designed to understand risk management in your organization. The following statements can be answered using a “YES” or “NO”.

<table>
<thead>
<tr>
<th>Which are the major risks you face?</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Risk</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>International Risk</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Stand-alone Risk</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Competitive Risk</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Market Risk</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Project Specific Risk</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>How are the risks of your portfolio measured?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-----</td>
<td>----</td>
</tr>
<tr>
<td>Sensitivity Analysis</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Scenario Analysis</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Break-even Analysis</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Simulation Methods</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Others</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>
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