

# **Capital budgeting techniques in a recessionary South Africa**

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## **ABSTRACT**

The purpose of this research was to examine the decision making process individuals and organisations make with regards to utilising capital budgeting techniques used and the impact operating during a recession or times of uncertainty have on the preference among the techniques.

The literature review presents an examination of the existing studies and literature surrounding the most commonly used techniques namely those found within the Discounted Cash Flow and Payback Criteria classification of techniques available.

13 in depth interviews were held with professionals who utilise the techniques to assist their individual organisations to make more sound decisions when looking to invest their money in a capital project.

The report presents the results from the interviews while focusing on the techniques used to when evaluating potential investments during times of growth. Then the research examined the impact a recession or times of uncertainty have on the decision making process while examining the critical factors affecting both periods.

The research found that although, as per the literature review, the Internal Rate of Return is the preferred technique, there was a difference in the use of supportive techniques when operating in times of growth and those of decline.

## DECLARATION

I, \_\_\_\_\_, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

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GREGORY JASON STERN

Signed at .....

On the ..... Day of ..... 2013

## **DEDICATION**

This research report, my MBA and all my achievements are dedicated to parents who have pushed me, throughout my life, to achieve more than I ever imagined possible.

## **ACKNOWLEDGEMENTS**

- My supervisor, Douglas Taylor, for his time, guidance, patience, insight and assistance throughout the research process,
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# **CHAPTER 1: INTRODUCTION**

## **1.1 Purpose of the study**

The purpose of this research is to examine the decision making process companies go through to create a capital budget and thus allocate future funds to capital expenditure projects within South African organisations. The report will establish whether the economic global crisis, which began around 2007/2008, has had an impact on the decision making process a company goes through when allocating capital expenditure and the extent to which capital expenditure is optimally allocated. It will also attempt to investigate why companies prefer one technique over the other.

## **1.2 Context of the study**

Vishnu (2000, 245) and Moodley (2003, 28) agree that post 1994, the landscape of South Africa has been drastically altered by the introduction of international competitors and access to a global market. Moodley (2003, 29) goes on to argue that a second factor has affected the South African landscape, most notably within the manufacturing industry, namely the relaxing of international trade restrictions and the adoption of open market practices by the South African government as well as the rest of the world.

Following the global economic crisis in 2008 South Africa, for the first time in over 16 years, entered into a recession in 2009 after recording a negative growth in both the fourth quarter of 2008 and the first quarter of 2009. (The Economist, 2010) (Sapa, 2009)

It is worth noting that towards the end of 2010, South Africa's Finance Minister Pravin Gordon announced that South Africa had managed to overcome the worst of the global and local recession. (BuaNews, 2010)

*“The optimal balance between debt and equity financing has been a central issue in corporate finance ever since Modigliani and Miller (1958) showed that capital structure was irrelevant.”*

(Myers, 1989, 80) (Modigliani and Miller, 1958)

However, post 2007 and the global economic crisis, many companies were negatively affected by the global recession, but in late 2009 the markets started to turn from the red to the green but only marginally.

*“These movements have been echoed by the bank stress tests, which forecast the ability of the large banks to survive through 2010 with an adequate cushion of capital.”*

(Baily and Elliott, 2009, 3)

With every industry being affected by the recession, it became harder for organisations to raise funds for capital investments. As such the decision to invest in one project over another became more challenging.

## **1.3 Problem statement**

### **1.3.1 Main problem**

Investigate how South African corporations used available capital budgeting techniques to make investment decisions pre and post the financial crisis.

### **1.3.2 Sub-problems**

- The first sub-problem is to determine the types of capital budgeting techniques used by South African corporations
- The second sub-problem is to determine the factors that influence the capital budgeting decision making process.

- The third sub-problem is to establish if the techniques used to evaluate capital budgeting decisions and the factors influencing these decisions were different in a pre and post financial crisis environment.

## **1.4 Significance of the study**

The study fills a gap in examining the impact the global economic crisis has had on capital budgeting decisions within an organisation with regards to the use of the techniques to support the capital budgeting decision making process.

There are many studies on capital structure and the impact capital structure decisions have on the market value of a firm. (Baker and Wurgler, 2002) (Alti, 2006) (Masulis, 1983) (Welch, 2003) (Pawlina, 2010) However there are only a limited number of studies regarding the capital budgeting decision making tools and the processes involved in making those capital investment decisions and why those tools were preferred over another. (Baker and Wurgler, 2002) (Bierman and Smidt, 2006) (Friend and Lang, 1988) (Myers, 1989)

This study therefore attempts to investigate the impact of the global economic crisis on capital budgeting decisions within an organisation and as such capital expenditure decision factors. It also attempts to provide insight and guidance to organisations and professionals within South Africa that wish to understand the factors that go into making critical decisions around capital budgeting. .

## **1.5 Delimitations of the study**

The study focused on capital budgeting and expenditure decision making processes within South African organisations and the factors that influence those decisions.

The study focused on the impact the economic global recession has had on South Africa and examined the impact the crisis had on capital budgeting decisions.

However the study did not investigate the impact these decisions have on a firm's value but focused rather on the types of capital budgeting projects that exist within a company as well as the factors and risk that exist within the capital budgeting decision process.

## **1.6 Definition of terms**

- Capital Structure – The composition on a company's balance sheet with regards to their Liabilities and Shareholders' Equity. (Harvey, 2011)
- Capital Budgeting – *“process of evaluating the desirability of long term investment propositions”* (Stout, Yan Alice and Howard, 2008). It is the *“process of choosing the firm's long-term assets”*. (Harvey, 2011)
- Capital Expenditure (CAPEX)– *“Amount used during a particular period to acquire or improve long-term assets such as property, plant, or equipment.”* (Harvey, 2011)
- Market Value – Depending on the firm, i.e. public or private, as well as depending on the method used to value a firm, the market value is the value one is prepared to pay to acquire a part or the whole organisation. (Investopedia, 2011)

## **1.7 Assumptions**

The following assumptions have been made regarding this research;

- The respondents had enough knowledge in capital expenditure decision making to be able to eloquently discuss the topic.
- The total number of respondents was sufficient to gain adequate information to help support the research.
- Capital Budgeting and Expenditure information was conveyed honestly and truthfully by all respondents as any false or misleading data will have a negative effect on the research.

The respondent sample reflected the general understanding surrounding capital expenditure decisions and the factors that influence the decisions. Non-representative views would influence the results of the study and thus reduce its accuracy and validity.

## CHAPTER 2: LITERATURE REVIEW

### 2.1 Introduction

This section contains a literature review on the key themes of relevance to the study. The first area is a review of the background discussion relating to capital budgeting and the theory surrounding capital structure.

The next section relates to the categories of capital expenditure and the sources of capital and/or mix thereof.

The final two sections relate to capital budgeting and expenditure and include a description of what capital budgeting is, what techniques are used and which techniques have been identified as most commonly used with regards to operating during times of growth and times of uncertainty.

The section concludes with an overview of the key learning points.

### 2.2 Background discussion

*“Corporate capital budgeting and cost of capital estimation are among the most important decisions made by the financial manager”*

*(Ryan and Ryan, 2002, 2).*

Competitive advantage, according to Maritan (2001, 514), is derived through an organisation’s specific resources and capabilities. This according to Maritan (2001, 514), is determined by how the organisation obtains, enhances and distributes these resources and capabilities in order help to define its competitive advantage and position.

The sustainability of a competitive advantage and position depends heavily on how long it takes the competition to catch up and replicate the *“firm's acquisition, development, and deployment of those resources and capabilities”* (Maritan, 2001, 514).

### **2.2.1 What is Capital Budgeting**

When evaluating a potential investment organisations utilise the tools that they have at their disposal to facilitate the decision making process. Elaborate systems can be designed to assist in the decentralisation of the decision making process. This according to Harris and Raviv (1998, 2) results in the use of a capital budgeting system.

Capital budgeting involves the committing of funds into an investment for a future return. The techniques involved in the evaluation of these investments is thus important to the continued health of an organisation and as such techniques are used to enhance the decision making within an organisation. Capital budgeting is used by organisations to better determine which projects they should invest in. (Gervais, 2009, 1)

The importance surrounding capital budgeting relates to an organisations ability to grow and develop within their markets. This is why *“capital budgeting is one of the most important decisions that face the financial manager”* (Ryan and Ryan, 2002, 1), as it enables an organisation to ensure the “maximisation of shareholder value” (Maroyi and van der Poll, 2012, 9278).

Baker and English (2011 ,1) support Ryan and Ryan (2002), Gervais (2009) and Maroyi and van der Poll (2012) but go onto state that capital budgeting also refers to a process of elimination that managers utilise to make greater informed decisions about an organisations expansion. This relates to whether long-term investments or capital expenditures are worth pursuing by their organizations” (Baker and English, 2011, 1).

This, according to Gervais (2009, 1), includes investments decisions relating to new projects, re-assessing an existing project and the amount of future capital committed to the project, allocating capital across division for their own capital projects, and acquisitions of other firms.

Gervais (2009, 1) goes onto to state that “in essence, the capital budgeting process defines the set and size of a firm’s real assets, which in turn generate the cash flows that ultimately determine its profitability, value, and viability”.

### **2.2.2 What is Capital Structure**

The capital structure of any organisation is created through “*planning and managing a firm’s long-term investments*” (Firer, Ross, Westerfield and Jordan, 2009, 4). It is how an organisation finances its investments through either equity, debt or a combination of both. According to Frank and Goyal (2009, 6) when making the decision to use debt instead of available funds or equity, one is reallocating future returns from equity suitors.

A firm utilises Capital Budgeting techniques to evaluate and assess potential investments as well as to support decisions made where the availability of funds limit the number of projects available.

According to Frank and Goyal (2009, 6) the capital structure “theory suggests that capital structure could either enhance or impede productive interactions among the stakeholders.” This according to Frank and Goyal (2009, 6), is a result of an organisations demands on their return on investment resulting in the “shareholders” to make critical decisions in favour of the firm.

Frank and Goyal (2009, 26) identified factors in their study that are critical to capital structure within an organisation and how they are leveraged. The level to which a firm is leverage relates to the amount of borrowings the firm uses to finance their projects. (Investopedia, 2014)

In their findings, Frank and Goyal (2009, 26) identified similar behaviours among organisations operating within an industry populate with medium-sized organisations and where most organisations were typically highly leveraged due to a need to compete within a tight market.

Frank and Goyal (2009) go on to state that organisations that are able to maintain sustainable growth through retained earnings, have a tendency to be less leveraged than their competition and as such require less financial assistance.

They further identify that an organisations leverage is directly linked to the expectation surrounding inflation and where inflation is expected to be high, an organisations leverage level follow (Frank and Goyal , 2009, 26).

This is supported by Fama, Ross, Westerfield and Jordan (2009, 5) who add that as capital structure is a specific mixture of long-term debt and shareholder equity that an organisation can use to finance current and future operations the level they are leveraged will have a direct impact on their ability to invest in projects.

As such a critical issue is raised, how and should an organisation borrow money to invest in capital operations, should shares be issued to raise the capital through equity, and/or what is the best combination of both.

According to Faulkender and Petersen (2006) a firm's ability to source funding for capital is directly linked to their access to the debt market and the relative outlook of the capital investments position.

According to Rauh and Sufi (2010, 2) organisations that have preferential credit rate will source their funding primarily through debt however those that focus more on a multi-layered capital structure do so due to the credit rates available.

*"The most important factors affecting debt policy are maintaining financial flexibility and having a good credit rating."*

*(Graham and Harvey, 2002, 2).*

According to Graham and Harvey (2002, 2) the primary concern among organisations when using equity to finance investments relates to the earnings per share dilution as well as the effect on the share price.

## **2.3 Sources of capital**

As stated an organisations capital can be raised through debt, equity or a combination of both, can result in the agency problem. The Agency Relationship, according to Firer et al.(2009, 11) is the relationship between management and the shareholders within an organisation. The agency problem is where there is the possibility of conflict arising between these two parties (Firer et al., 2009, 11). When raising capital through equity, managers have to be careful as they may dilute some of the shareholders ownership within an organisation (Firer et al., 2009, 11).

### **2.3.1 Trade-Off Theory**

As stated above when determining how to fund a capital project one has to decide whether to fund it through debt or equity. An organisations capital structure, according to the trade-off theory, is determined through a “trade-off” made between the benefits of debt and the cost of debt (Frank and Goyal, 2009, 5).

These benefits, according to Frank and Goyal (2009, 5), can be obtained through the tax-bankruptcy trade-off and agency perceptions to assist in the prevention of the inefficient use of debt that can potentially cause a company to declare bankruptcy.

The tax-bankruptcy trade-off persecutions relates to an organisations ability to balance the benefits of using debt against the cost of bankruptcy ( Frank and Goyal , 2009, 5).

The agency perception, according to Frank and Goyal (2009, 5), relates to the mitigation of risk to an organisations cash flow status when using debt as the cost of to an organisation, besides the financial risk, can exacerbate shareholder conflict

According to Strebulaev (2007, 1749) the trade-off theory implies that organisation achieve their optimal capital structure through “balancing the corporate tax advantage of debt against bankruptcy and agency costs”.

Thus an organisation determine their desired leverage ratios by calculating the “tax advantages, costs of financial distress, mispricing, and incentive effects of debt versus equity” (Faulkender and Petersen, 2006, 45).

### **2.3.2 *Pecking Order Theory***

The pecking order theory is based on a belief that there are no set targets and that an organisation will raise its capital based on a “pecking” order, while preferring to raise capital internally before looking outside the organisation (Brounen et al., 2004, 93). As such organisations prefer to use retained earnings before other sources of capital (Ozkan, 2001, 181).

According to Antoniou, Guney and Paudyal (2008, 60), within the pecking order theory, organisations do not have leveraged targets and as such will only use debt when retained earnings are insufficient. They will also only raise external capital as a last and final resort.

As such when retained earnings are fixed the pecking order theory implies that the higher the investment is, the greater the chances the organisation will have higher borrowing (Strebulaev, 2007, 1770).

According to Frank and Goyal (2009, 6) the pecking order theory has its origins in descriptive literature but was clearly articulated by Myers (1984).

According to Myers (1984), the pecking order theory states that a firm prefers to obtain finance internally where they have no defined target debt-to-equity ratio and where the cost and benefits of borrowing are outweighed by using equity instead.

### **2.3.3 *Market Timing Theory***

The market timing theory is based on a relatively old ideas, as per Myers (1984), and is based on the notion that managers monitor market conditions for both debt and equity (Frank and Goyal, 2009, 6). Depending on which market is more appealing, i.e. debt or equity, when an organisation tries to raise capital they will choose the more favourable option (Frank and Goyal, 2009, 6).

### **2.3.4 Proposition 1**

Important elements in the capital budgeting decision will include the funding mix between short and long term debt, the capital structure of the firm in terms of the proportions of debt and equity; and the availability of funding for the proposed investment.

## **2.4 Factors that influence the capital budgeting techniques**

The capital budgeting decision process, according to Gitman and Forrester (1977, 26), is one of the key decision areas confronting the financial manager, as its results are fundamental in helping mould the firm's future opportunities.

Maritan (2001, 513) agrees with Gitman and Forrester (1977) regarding the importance of capital budgeting within an organisation, and adds that it is also important as “funds and other resources, such as people and know-how, are committed to projects in anticipation of a future expected return that exceeds the cost of making that commitment” (Maritan, 2001, 513).

Capital budgeting implies that managers use the capital raised through debt or equity by an organisation, to invest in assets, known as capital goods, which help generate cash flows for the organisation (Baker and English, 2011, 1).

Capital budgeting and thus capital investment decisions are important for a number of reasons. Firstly, capital investments typically account for a large amount of the funds of the organization and consequently have a fundamental impact on the future cash flows of the organisation. Furthermore, once an investment decision has been taken, it is often not possible to reverse it, or it is very costly to do so and committed funds are normally tied up for a considerable period of time. Investments also affect the profitability and long-term strategy of the firm.(Andrews and Butler, 1986, 31; Du Toit and Pienaar 2005, 20; Holmes, 1999, 2)

Managers use a wide variety of techniques to asses' capital projects, thus creating the capital budget. Below is a description of the most commonly used techniques, as per the literature.

### **2.4.1 Discounted Cash Flows Methods**

#### **a. Pros**

Gitman and Forrester Jr (1977, 68) state that there are several capital budgeting techniques that companies have to utilise, but the discounted cash flows are sophisticated valuation techniques as they “explicitly consider the time value of money”.

Weil and Oyelere (2006) identified key advantages of the discounted cash flow techniques compared to more traditional, non-discounting, capital budgeting techniques used by organisations. The non-discounting techniques identified by Weil and Oyelere (2006, 26) are the payback, average accounting return methods and “gut feeling” (Weil and Oyelere, 2006, 26). This is due to the fact that discounted cash flow methods endeavour to factor in the uncertainty relating to future cash flows. “The future, by definition, is uncertain and the further into the horizon the cash flows are that need to be predicted, the more difficult it may be to generate accurate predictions” (Weil and Oyelere, 2006, 26).

Weil and Oyelere (2006) go on to state that discounted cash flow techniques enable an organisation to better support their decisions by providing support through “screening-type or preference-type capital budgeting decisions” (Weil and Oyelere, 2006, 25).

#### **b. Cons**

A concern with this method is that it does not readily take into account real option pricing. “The failure to account for the value created by flexibility in management decisions, and the problem of applying a constant discount rate over the life of a project are commonly mentioned” (Truong, Partington and Peat, 2008, 6).

Baker and English (2011, 4) state that the main challenge when using discounted cash flow is correctly estimating the appropriate rates to use when discounting the future cash flows for a project. They agree that managers today have a wide variety of sophisticated software and techniques to use in this estimation, but each method still carries with it potential complications.

Adler (2006, 4), in his article “Why DCF capital budgeting is bad for business and why business schools should stop teaching it”, believes that the “assumptions related to DCF are increasingly becoming so disconnected from business reality that its continued use should come with the following warning” (Adler, 2006, 4) that the financial management tools is hazardous to one’s organisation.

Adler (2006) believes that discounted cash flow as a capital investment assessment tool suffers from limitations due to its narrow perspective when analysing different investments as it excludes non-financial benefits. Adler (2006) further emphasizes the fact that the Discounted Cash Flow methods due to an inconsistency in how it treats the variables contributing to the methods, is based on faulty assumptions.

Adler (2006, 9) further argues that discounted cash flow techniques are not as effective when the decision at hand is strategic in nature. Adler (2006, 9) states that this is due to the fact that the information required is “neither present nor discoverable in time for an ex ante evaluation. Only after the decision is made does useful data likely become available” (Adler, 2006, 9).

Although there are those that argue against using discounted cash flow methods, Adler (2006), Baker and English (2011), Alkaraan and Northcott (2006), Truong et al. (2008), Weil and Oyelere (2006, 26) argue that the true problem lies in the inaccurate inputs used in the methods rather than the techniques themselves.

#### c. ***Net Present Value (NPV)***

According to Firer, Ross, Westerfield and Jordan (2009, 292) the NPV of an investment project is the difference between the market value of a project and the cost of the project. The NPV rule surrounding whether to accept or reject a project relates to the value of the NPV assessed. A positive value means the project should be accepted and if a negative value is obtained it should be rejected.

The NPV is “estimated by calculating the present value of the future cash flows (to estimate market value) and then subtracting the estimating the cost” (Firer et al., 2009, 292).

Kellerher and MacCormack (2004, 73) add that the calculation relating to NPV assumes that the organisation can only earn its “cost of capital on interim cash flows” (Kellerher and MacCormack, 2004, 73), thus any future projects contain the future incremental project value.

Net present value, according to Ryan and Ryan (2002, 4), is not sensitive to multiple positive and negative changes in cash flows from a project.

“It is a method that presents the expected dollar amount that shareholder wealth would increase or decrease upon the acceptance of a project” (Ryan and Ryan, 2002, 4).

d. ***Internal Rate of Return (IRR)***

The internal rate of return, also known as the discounted cash flow return, is the “discount rate that estimates NPV of an investment equal to zero” (Firer et al., 2009, 292). The rule governing internal rate of return analysis states, according to Firer et al. (2009, 292), is to accept a project where its internal rate of return is greater than the required rate of return.

A concern raised by Kellerher and MacCormack (2004, 71), based on an analysis of finance textbook as well as academic research, is that the internal rate of return “make bad projects look good and good ones look great.”

Another concern stated by Kellerher and MacCormack (2004, 71) that the internal rate of return can create two different valuations for an identical project when cash flows fluctuate between positive and negative values and vice versa. Kellerher and MacCormack (2004, 71) also state that as the internal rate of return is expressed as a percentage, the size of a project is not taken into account and as such a small project may appear more attractive than a larger one, where the larger project may have a greater net present value,

e. ***Profitability Index (PI)***

The profitability index, also known as the Benefit/Cost Ratios (Gitman and Forrester Jr, 1977, 68), is the ratio analysis of the present value of a project to its cost (Firer et al., 2009, 292). In essence it measures an investments value displayed as a single rand invested over each rand spent. (Firer et al., 2009, 292)

The profitability index, just as the internal rate of return is similar to the net present value, however it is unable to rank mutually exclusive projects. According to Firer et al. (2009, 292) it can be used to rank capital investment projects when an organisation has more than one positive net present value investment that exceed their current capital financing.

## ***2.4.2 Payback Criteria Methods***

a. ***Payback Period***

The payback period is the amount of time it takes the sum of capital investment cash flows to equal the costs of the project. The acceptance rule surround the Payback method is where the calculated payback period is below an acceptable or assumed cut-off/acceptable return period. (Firer et al., 2009, 292)

This according to Ryan and Ryan (2002, 7) was the preferred valuation method used by organisations in the 1960s.

However Brounen, De Jong and Koedijk (2004, 81) argue that the payback period is flawed as it fails to acknowledge the time value of money as well as cash flow implication post the cut-off/acceptable return period. (Brounen et al., 2004, 81)

b. ***Discounted Payback Period***

The discounted payback period is similar to the payback period in that it also determines whether to accept or reject a project based on the amount of time it takes the sum of capital investment cash flows to equal the costs of the project. However with this model the cash flows are discounted and as such the if the acceptance rule is where the discounted payback period is less than acceptable or assumed cut-off/acceptable return period. (Firer et al., 2009, 292)

According to Ryan and Ryan (2002, 10) discounted techniques are preferred by organisations today over non-discounted techniques.

### **2.4.3 Accounting Criteria**

#### **a. Average Accounting Return (ARR)**

According to Firer et al. the average accounting return is a “measure of accounting profit relative to book value” (2009, 292). They go on to state that it is not related to the internal rate of return but is related to the return on assets calculation. If the average accounting return is greater than a desired return a project will be accepted or rejected.

### **2.4.4 Key Analysis of capital budgeting techniques**

In the middle 1990's it was found by Pike (1996) as well as Abdel-Kader and Dugdale (1998), that most organisations use more than one financial analysis technique in capital budgeting investment appraisal.

This is supported by latter studies done by Gitman and Forrester Jr (1977), Runyon (1983), Graham and Harvey (2001), Ryan and Ryan (2002), and Du Toit and Pienaar (2005).

In a study done by Du Toit and Pienaar (2005) it was found that the primary capital budgeting method preferred by organisations to value a project is the Internal rate of return being preferred by 37.1% of respondents, and net present value being preferred by 27.4% of respondents. It is worth noting that internal rate of return and net present values were used in conjunction by 71.9% of the respondents. It was also found that 11.3% of respondents preferred the Accounting return on investments or Average Accounting Return.

Du Toit and Pienaar (2005) also found that the payback method was preferred by 8.1% of organisations but believed this indicate that the payback method was utilised as a supporting method and not the main valuation method. This Du Toit and Pienaar (2005) argued is potentially due to the fact that as stated above, the payback period method can be used as a measure of risk.

This differs from studies done by Gitman and Forrester Jr (1977) and Runyon (1983). Gitman and Forrester Jr (1977) found that the internal rate of return, 53.6%, was the most popular but the average rate of return, 25%, was the second preferred method. Net present value and payback period came in a close third with 9.8% and 8.9% respectively.

Runyon (1983) found in their study that the payback period was the most preferred method at 45.4%, average rate of return was 23.9%, net present value 4.8% and internal rate of return was 4.4%.

Brounen et al. (2004, 72) found that within European organisations the payback period, compared to discounting their cash flows through internal rate of return and net present value, is preferred.

“In the UK, Netherlands, Germany, and France, 69.2%, 64.7%, 50%, and 50.9%, respectively, of CFOs use the payback period as their favourite tool. Of the US firms cited by Graham and Harvey (2001), 56.7% said they used this payback rule, but it was the third most popular tool after the IRR and NPV” (Brounen et al., 2004, 81).

This is in contrast to the academic view that net present value is superior to internal rate of return. It is argued by Ryan and Ryan (2002, 3) that the Net Present Value represents an expected change in shareholders wealth based on forecasted cash flows as well as discount rates. Ryan and Ryan (2002, 3) further state that the assumptions incorporated in the Net Present Value formula, where cash flows are generated over longer periods, assumes that the cash generated will be re-invested in the project based on the cost of capital.

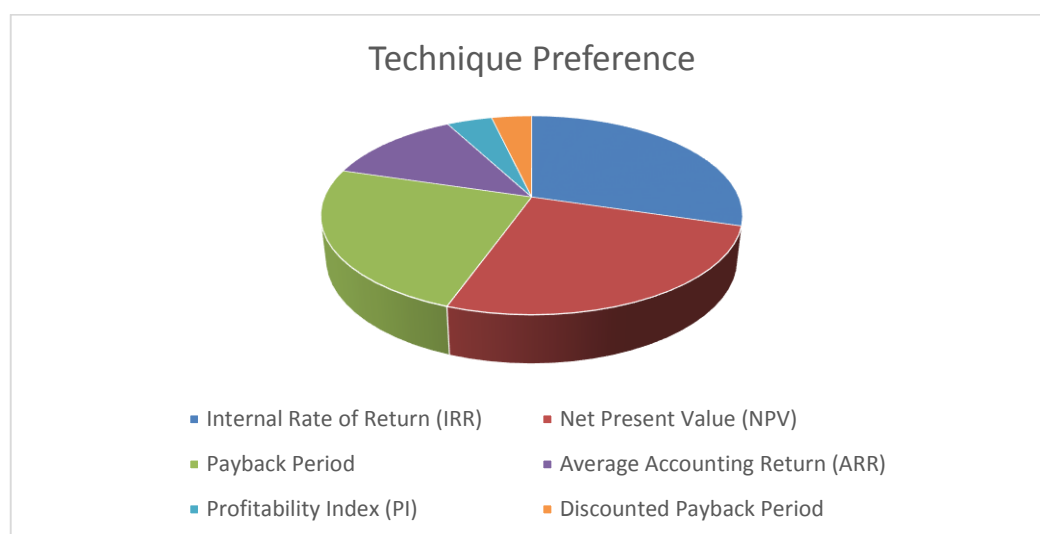
With regards to the Internal Rate of Return, as stated above is the “discount rate that estimates NPV of an investment equal to zero” (Firer et al., 2009, 292) and thus the discount rate where Net Present Value is equal to zero, assumes that any cash generated is re-invested at the assumed internal rate of return “which for any positive NPV project is higher than the cost of capital” (Ryan and Ryan, 2002, 3)

When analysing studies with a specific focus on South African companies a similar trend was identified. The most common capital budgeting techniques used within South Africa, as summarised by Maroyi and van der Poll (2012) prior to 1986 were the average accounting rate of return, payback period, internal rate of return and net present value. Maroyi and van der Poll (2012) went onto state that internal rate of return and net present value remained a favourite among south African organisations, while the use of average accounting rate of return has not featured in post studies done by Hall (2000), Du Toit and Pienaar (2005) and Hall and Millard (2011).

In contrast Correia and Cramer (2008, 36) found that “NPV and IRR are the primary methods used to evaluate projects, and 82.1% of chief financial officers (CFOs) always or almost always use the NPV method, whilst 78.6% of CFOs always or almost always use IRR. There has been a significant decline in the use of the payback period method and the accounting rate of return. Only 53.6% of CFOs always or almost always use the payback period method to evaluate projects.”

Based on the studies performed by Gitman and Forrester Jr, (1977), Runyon (1983), Graham and Harvey (2001), and Du Toit and Pienaar (2005) below is a graphical representation of the techniques preferences determined by the percentage identified in all the studies.

**Figure 1: Technique Preference among major studies**



### **2.4.5 Proposition 2**

The factors that influence capital budgeting techniques are based on the manner in which the investments viability is determined and play a role in the capital budgeting technique used to perform a valuation as well as the budget allocated. In order to support decisions made using the preferred technique people will utilise other valuations forms to support the initial findings and will include a method that uses the time value of money such as Net Present Value, Internal Rate of Return or Payback Period techniques.

## **2.5 Capital expenditure within different economic environments**

### **2.5.1 Under uncertainty**

*“Some of the most important aspects of most capital investments are in fact the timing of the investment and the managerial flexibility involved”*

*(Zhang, 2011, 2)*

The Discounted Cash Flow method assumes that the initial investment outflow is based on stable variables, one is able to evaluate the different options with some sort of certainty (Ehrhardt and Wachowicz, 2006, 1).

During times of uncertainty the challenge organisations face when utilising capital budgeting techniques relates to the degree with which one is able to trust the information provided, i.e. the source of the data. (Zhang, 2011, 42)

According to Bierman Jr and Hass (1973) there is a lack of acceptable methods for an organisation to apply to the capital budgeting decision making process. This is in part due to the capital budgeting valuation process having to rely on subjective information and thus estimates. (Zhang, 2011, 433)

According to Bierman Jr and Hass (1973) when an organisation is faced with uncertainty, elements within the capital budgeting decisions are difficult to quantify. This is due to the determinants of the capital budgeting techniques resulting in inaccuracy in project evaluation during not only cash flow uncertainty but market uncertainty (Zhang, 2011, 7).

Operating within a recessionary environment, or under uncertainty, can result in the risk adjusted discount rates, and/or premiums, fluctuations used within the Discounted Cash Flow and Payback methodology, due to variable fluctuations, presenting challenges when trying to determine the outcome. (Bierman Jr and Hass, 1973, 119) (Ehrhardt and Wachowicz, 2006, 15)

*In the presence of a high level of cash flow uncertainty, traditional Discounted Cash Flow methods, such as NPV, cannot generate an appropriate value of the investment.*

*(Zhang, 2011, 7)*

This is, in part, due to the fact that organisation are uncertain as to the movement in variables such as the exchange rate, interest rates which have a major impact on the 2 most common capital budgeting techniques used, the Internal Rate of Return and Net Present Value. As such the inherent characters of the investment valuation and decision making process's during times of uncertainty are unavoidable. (Zhang, 2011, 30)

### **2.5.2 Non-tangible factors affecting Capital Budgeting decisions**

Behavioural finance is a relatively new field of study, emerging in the late 1980's and early 1990's. Statman and Caldwell (1987) were one of the first to publish an article on the topic, They described behavioural finance as a "descriptive theory of choice under uncertainty" (Statman and Caldwell, 1987, 8). They state that it provides a framework that helps describe the tendency by managers to resist terminating their projects.

According to Lovallo and Sibony (2006, 20) behavioural finance implies that human prejudices, such as a perceived optimism surrounding a projects success,

can affect organisations strategic decisions. Lovallo and Sibony (2006) go onto state that the strategic decisions are susceptible to what economists call the “principle-agent problem”; when the incentives of certain employees are “misaligned with the interest of their companies, they tend to look out for themselves in deceptive ways” (Lovallo and Sibony, 2006, 20).

Due to the fact that capital budget techniques are based on estimated future cash flows as well as the rate an organisations discounts the projects, these projects are based on a subjective process that is determined by the behavioural characteristics (Gervais, 2009, 1).

Several factors may explain why managers may also be expected to be overconfident, especially in a capital budgeting context. First, capital budgeting decisions can be complex. They often require projecting cash flows for a wide range of uncertain outcomes. People are typically most overconfident about such difficult problems. (Gervais, 2009, 1)

A concerning aspect of capital budgeting is the overconfidence some managers place on the accuracy of the information they use to build their models and their ability to control the risk associated with a project. This according to Biondi and Marzo (2011) as well as Gervais (2009) leads to capital budgeting situations where overconfident managers tend to overinvest and over value investments.

### **2.5.3 Proposition 3**

The factors that influence capital budgeting expenditure during different economic environments are based on the degree with which one is able to trust the information provided and the impact they have on the capital budgeting techniques used. In order to provide more accurate and relevant valuations of the investments, one has to consider the variables impacting directly on the valuation technique as well as external elements such as external markets, exchange rate fluctuations and the interest rates.

## **2.6 Conclusion of Literature Review**

Although unique and at the discretion of each and every organisation capital expenditure is a critical aspect to the sustainability and growth of an organisation. In-order to create wealth one has to grow, nurture and develop it.

As such capital budgeting decisions play a critical role in the structure of an organisation as well as to where they allocate the available capital to invest in growth and development.

The literature review reveals that the discounted cash flow methods, specifically internal rate of return and net present value, remain the critical techniques use in capital budgeting decisions. However there are those that believe that there are inherent faults that lie within these methods.

A new area of interest has arisen in recent years surrounding the qualitative aspects involved in capital budgeting decision that when combined with the quantitative aspects yield a deeper understanding and better valuations when making these decisions.

However the reason why organisations prefer one technique over the other has not been conclusively resolved in the literature.

### **2.6.1 *Proposition 1***

Important elements in the capital budgeting decision will include the funding mix between short and long term debt, the capital structure of the firm in terms of the proportions of debt and equity; and the availability of funding for the proposed investment.

### **2.6.2 *Proposition 2***

The factors that influence capital budgeting techniques are based on the manner in which the investments viability is determined and play a role in the capital budgeting technique used to perform a valuation as well as the budget allocated. In order to support decisions made using the preferred technique people will utilise other valuations forms to support the initial findings and will include a method that uses the time value of money such as Net Present Value, Internal Rate of Return or Payback Period techniques.

### **2.6.3 *Proposition 3:***

The factors that influence capital budgeting expenditure during different economic environments are based on the degree with which one is able to trust the information provided and the impact they have on the capital budgeting techniques used. In order to provide more accurate and relevant valuations of the investments, one has to consider the variables impacting directly on the valuation technique as well as external elements such as external markets, exchange rate fluctuations and the interest rates.

## **CHAPTER 3: RESEARCH METHODOLOGY**

This section outlines the methodology that will be followed in order to conduct this research. Below is a discussion regarding the literature around qualitative research, followed by a review of the research design and research instrument that have been chosen to be used.

The methodology section is concluded by discussion the issues surrounding data collection and analysis in relation to this study, concluding with a discussion regarding the validity and reliability of this study.

### **3.1 Research methodology**

Since the focus of this research is to understand how South African corporations utilise capital budgeting techniques to allocate their capital budget, the research methodology used in this study is qualitative.

A qualitative research method was used due to the population size, the nature of the research and due to the limited amount of respondents available for data collection.

One conducts “qualitative research because a problem or issue needs to be explored.” (Creswell, 2007, 39) According to Williams (2011, 67) a qualitative study is utilised when one wants to obtain information for the purpose of “describing, explaining, and interpreting collected data.”

This research methodology is appropriate for this study as “qualitative research is a holistic approach that involves discovery.” (Williams, 2011, 67)

However according to Holliday (2006) a major binding aspect of qualitative research is its “opposition to positivism, the philosophical basis for quantitative research” (Holliday, 2006, 1). It is focused on describing the actions within a scenery and asks questions of instead of trying to control the variables (Holliday, 2006, 4).

## **3.2 Research Design**

According to Rowley (2002, 18) a *“research design is the logic that links the data to be collected and the conclusions to be drawn to the initial questions of a study.”*

The research was designed whereby an interviewee could divulge information without divulging company confidential information. As such the research was conducted through recorded interviews supported by follow up email discussion surrounding the subjects discussed. This enabled the collection of both factual and descriptive information relating the research.

The research design that will be followed is known as the basic qualitative research (Merriam, 2009, 22). According to Merriam (2009, 22) this techniques is utilised when the researcher is more focused on understanding the meaning or reasoning behind the questions being asked.

Within the basic qualitative research design structure, one focuses on the meaning attributed to an experience and how something is interpreted (Merriam, 2009, 22).

Although elements of grounded theory, where the “inquirer generates a general explanation (theory) of a process, action, or interaction shaped by the views of a large number of participants” (Creswell, 2007, 62), do exist within this research a theory grounded in the data is not the end objective.

## **3.3 Population and sample**

### **3.3.1 Population**

The population of this research consists of the senior financial managers and directors within South African organisations, who are directly involved in the decision making process surrounding capital budgeting and the use of the techniques. The organisations were selected across various industries within the private and public sector in both Cape Town and Johannesburg.

### **3.3.2 Sample and sampling method**

As the focus of this study is primarily based on financial information, the research required the respondents to have a high level of financial knowledge and understanding.

Due to the primary information gathering technique used of personal interviews as well as the limited response for interview requests, a sample size of 13 consisting of both Directors and Financial Managers was obtained.

As such 13 interviews were conducted among a range of different organisations with the primary form of business being manufacturing.

Interviews were requested telephonically and via email (Addendum A).

Interviews were held at the respondents' place of work and lasted between 45 and 90 minutes.

Table 1 below identifies the respondents and their designation within their organisation.

**Table 1 : Designation of Respondents**

| Designation              | Respondents |
|--------------------------|-------------|
| Director                 | 5           |
| Financial Director       | 3           |
| Managing Director        | 3           |
| Senior Financial Manager | 2           |

### **3.4 The research instrument**

"The researcher is the primary instrument of data collection and analysis" (Merriam, 2009, 15). As such the information for this report was gathered through a series of semi-structured interviews. This was due to the fact that the interview enables the respondents to share information in a relaxed and friendly environment (Creswell, 2007).

The advantages for the semi-structured interview, according to (Merriam, 2009, 89), are that all questions used are flexible and no predetermined wording or order is essential the interview process. Merriam (Merriam, 2009, 89) goes onto state that a key aspect of this style is that the largest aspect of the interview is “guided by a list of questions or issues to be explored” (Merriam, 2009, 89).

The interview questions are listed in Appendix B, under the heading: The Questionnaire, and were intended to extract the facts and reasoning from the respondents required to investigate the research problem and sub-problems.

### **3.5 Procedure for data collection**

Creswell (2007, 118) identifies 6 critical aspects regarding data collection. These involve a) locating the individuals, b) creating a rapport and gaining access to the individual, c) collecting the data, d) recording the interview, e) resolving any issues that may arise, f) storing and sorting the data.

The interview respondents were contacted by telephone and/or email to agree to the interview as well as to arrange a time and place to meet. All interviews strictly adhered to the questions in Appendix B, under the heading: The Questionnaire and were conducted face to face. In certain circumstances where due to logistical challenges, the interview was performed telephonically or via email.

Follow up interviews were arranged where necessary to obtain a more complete data set and to clarify questions arising while reviewing the interviews.

As per Creswell (2007, 118), all interviews, where possible, were recorded, accompanied with notes taken during the interview.

### 3.6 Data analysis and interpretation

*“Producing rather than testing, hypothesis is more often the outcome of qualitative research”.*

(Holliday, 2006, 34)

According to Holliday (2006, 47) a significant aspect when performing qualitative research is the “need for researchers to show their workings, to reveal how they have managed the subjectivity inherent within this research paradigm. This is the major way in which rigour can be maintained.”

The data analysis procedure utilised in the research report followed the guidelines set by Mile and Huberman (1994, 10). In their guide on qualitative data analysis, they state that there are three core areas to consider when analysing data reduction, data display and conclusion drawing and verification (Mile and Huberman, 1994, 10).

Data reduction was accomplished through condensing the recordings and notes into excel summaries that were used for the data analysis. Data Display was accomplished through the use of tables to summarise the interviews and display the ranking outcomes. Throughout the interview process both data reduction and data display were adapted based on each interview outcome. This resulted in themes and a few inconsistencies appearing within the data. For the purposes of reporting the data a directed content approach was used when analysing the content. (Hsieh and Shannon, 2005)

Conclusion and drawing meaning from the data involved ranking the techniques used by each organisation and assigning a number to each preference.

### **3.7 Limitations of the study**

A qualitative survey was done with 13 respondents within different organisations and positions.

The nature of this study on its own was a limitation as organisations are uncomfortable discussing confidential information about the capital budgeting. As such in most circumstances the propositions were submitted prior to the interview to gain the trust of the interviewee.

Furthermore living in Cape Town, while having sourced mainly Johannesburg based organisation was a limitation in organising the interview itself.

### **3.8 Validity and reliability**

“Ensuring validity and reliability in qualitative research involves conducting the investigation in an ethical manner.” (Merriam, 2009, 209)

According to Creswell (2009, 190) validity within a qualitative research requires the researcher to ensure that the findings are accurate through a consistent interview approach.

Creswell (2009, 191) goes onto state that in order to ensure that one’s strategy maintains its validity one has to utilise peer debriefing and the use of an external auditor. This ensures the authors claims and interpretations from different data sources Present negative or discrepant information relating to or counter the theme of the report.

#### **3.8.1 External validity**

External validity concerns itself with the extent to which a study can be applied to other situations (Merriam, 2009, 223). Effectively how generalised are the results and how can they be applied elsewhere (Merriam, 2009, 223).

Miles and Huberman (1994, 279) state that external validity is required as one needs to know if a study has a larger impact and “are they transferable to the other contexts?” (Miles and Huberman, 1994, 279), as per Merriam (2009, 223)

External validity of this research was ensured by conducting the study in a manner that it can be applied to any type of organisations within South Africa and as such meets the external validity requirements. It was also concentrated to organisations operating within South Africa and within different industries. Furthermore organisations interviewed represented both the private and public sectors.

### **3.8.2 Internal validity**

“Internal validity deals with the question of how research findings match reality.” (Merriam, 2009, 213)

An assumption of qualitative research is that reality is all-inclusive and forever changing. As such it is not a singularly focused objective that is needed to be discovered or observed. (Merriam, 2009, 213)

Miles and Huberman (1994, 279) posted three questions that need to be asked to ensure internal validity within a study has been met.

*“Do the findings of the study make sense?”*

(Miles and Huberman , 1994, 279)

*“Are they credible to the people we study and to our readers?”*

(Miles and Huberman , 1994, 279)

*“Do we have an authentic portrait of what we were looking at?”*

(Miles and Huberman , 1994, 279)

Internal validity of this research was ensured as the respondents were invited to provide further feedback post interview when compared to other organisations as well as all interviews performed in a similar manner.

### **3.8.3 Reliability**

Reliability is a measure as to the “extent to which research findings can be replicated” (Merriam, 2009, 220). It is based on the assumption that there is one reality and that if repeated the research report will yield similar results (Merriam, 2009, 220).

In order to ensure that the study performed is reliable, one had to ensure that the study is consistent and dependable and that it can be triangulated, peer reviewed and a clear audit trail can be found (Merriam, 2009, 220) (Miles and Huberman, 1994, 278).

According to Creswell (Creswell, 2009, 190) the procedures to follow to ensure that the study is reliable relates the authenticity of the manuscripts, ensuring that there is no drifting in the definition of codes and shifting in their meaning as well as the cross-checking of codes developed by the situation posed during the interviews.

Reliability was ensured by conducting trial interviews to prepare the interviewer for non-standard responses and to test the questions contained within the questionnaire.

## **CHAPTER 4: PRESENTATION OF RESULTS**

### **4.1 Introduction**

The aim of this research is to investigate the impact the global economic crisis had on the decision making process companies go through to create a capital budget and thus allocate future funds to capital expenditure projects within South African organisations.

The chapter presents the results relating to rank-ordering questions and open-ended discussions obtained from the face-to-face as well as email interviews.

The chapters presents the demographic profiles of the organisations interviewed based on their industry and profiles. Due to the sensitivity viewed by the interviewees around the information relating to their capital expenditure they requested anonymity. Permission was granted to discuss the interviews using pseudonyms for each company while being able to discuss their industry.

Further to the demographic profiles of the organisations interviewed, the results gleamed from the interviews and pertaining to the propositions, one dealing with the categories, two with the factors and three with times of uncertainty, will be discussed using a summative approach to enable the ranking of sorting of the data.

### **4.2 Demographic profile of respondents**

A total of 13 interviews were conducted with senior financial managers and/or financial directors from the companies in question.

Within these industries respondents represented organisation that were either listed on the Johannesburg Stock Exchange (listed) or privately held entities (private).

Each respondent and their area of responsibility is unique in their organisational structure and area of focus. As stated earlier, respondents ranged from Group

Managing Director, Financial Directors, to Financial Managers. The respondents and their relevant industry are depicted in Table 2 below.

**Table 2 : Profile of Organisations**

| Company   | Industry                         | Listed or Private | Designation              |
|-----------|----------------------------------|-------------------|--------------------------|
| Company A | Corporate and Investment Banking | Listed            | Director                 |
| Company B | Corporate and Investment Banking | Listed            | Senior Financial Manager |
| Company C | Private Equity                   | Listed            | Managing Director        |
| Company D | Private Equity                   | Listed            | Director                 |
| Company E | Private Equity                   | Listed            | Director                 |
| Company F | Private Equity                   | Listed            | Director                 |
| Company G | Private Equity                   | Private           | Director                 |
| Company H | Manufacturing                    | Private           | Managing Director        |
| Company I | Manufacturing                    | Private           | Managing Director        |
| Company J | Manufacturing                    | Private           | Financial Director       |
| Company K | Manufacturing                    | Private           | Financial Director       |
| Company L | Manufacturing                    | Private           | Financial Director       |
| Company M | Construction                     | Private           | Senior Financial Manager |

The focus within most organisations that were interviewed was on growth through development and acquisition, however one, within Corporate and Investment Banking, focuses on investing with a future outlook to exit the markets eventually due to a heavy focus on emerging markets. As the companies strategies differed and this played a role in the type of projects that were evaluated.

In both cases within the Corporate and Investment Banking organisations, investments were made on behalf of multiple entities associated with the organisation as well as partnerships formed with outside parties. Within these organisations they had a diverse role of not only investing in their own projects but advising clients as well.

### 4.3 Results pertaining to Proposition 1

The objective of proposition 1 is to determine the major categories within capital budgeting expenditure that affect the capital budgeting decision making process. The major category focus for proposition 1 is on the source of capital utilised to fund the capital investments,

This section focused themes identified in the literature review to help guide the presentation of the different categories when discussing the sources of capital. The chapter sums up the relevant factors identified when making a decision related to financing a capital investment.

#### 4.3.1 Preferred source of Capital

As per the literature the major sources for funding capital budgeting expenditure is provided through two main sources; debt and equity.

In terms of the respondents preferred source of capital;

**Table 3 : Preferred Source of Capital**

| Company   | Capital     |
|-----------|-------------|
| Company A | Combination |
| Company B | Debt        |
| Company C | Combination |
| Company D | Debt        |
| Company E | Debt        |
| Company F | Debt        |
| Company G | Combination |
| Company H | Debt        |
| Company I | Debt        |
| Company J | Debt        |
| Company K | Debt        |
| Company L | Debt        |
| Company M | Combination |

As can be seen majority of respondent's preferential source of capital is through borrowings however a few, dependant on the project factors, utilise a combination of debt and equity.

a. **Debt**

*“Why use your own money if you could use someone else’s,  
especially if there is an interest shield for tax purposes”*

Company F respondent

The above statement describes why many South African companies prefer to use debt to finance their projects. The interest portion of borrowing the money is tax deductible and thus creates a “shield” for tax purposes.

However what emerged from the interviews was the source of the money borrowed. Although most respondents prefer to utilise South African resources, 3 respondents utilise both local and foreign resources.

In all cases, the respondents based their decision on the interest rates offered by South African lending agents and focused on the lowest rate attainable. When looking abroad to obtain finance for a project, the forecasted exchange rate view is considered in terms of the Rand’s strengthening or weakening against foreign currencies.

*“We borrow money on long term debt with banks at preferential interest rates or  
foreign loans in dollars lent to divisions at prime”*

Company H respondent

However respondents stated that if they are able to leverage their debt against an international holding company, then dependant on the interest rate offered, whether better or worse than South Africa, they would defer to the holding company to finance the projects.

Within the construction industry, as well as companies in the Private Equity industry that also focus on property development, the preferred source of capital is also debt but obtained through the use of existing bonds from other projects.

b. *Combination of Debt and Equity*

Four of the 13 respondents used a combination of both debt and equity evenly split among listed and private companies.

According to Company C they operate their business by cost of capital. This is due to the managements need for a targeted gearing ratio focused to be optimal for return to shareholders to drive cost to capital down.

*“Everything focused on shareholder value and return. If they exceed WACC servicing debt and giving shareholders generous return. IRR determines WACC target.”*

Company C respondent

When it came to the two listed companies, the decision to finance the projects through lending agents or equity shareholders was primarily based on the company’s Debt: Equity policy and how much they wanted to gear themselves.

Company C stated that the organisational focus is based on a 25% gearing ratio as they balance their book through dividends as they are a cash heavy business.

*“In theory all projects financed through debt but use dividends pay-out to balance gearing ratio.”*

Company C respondent

In Company M’s case, although they are a private equity organisation, they focus heavily on commercial development projects. When analysing the viability of a commercial investment, the look to owning the building and if possible the land as well. This is due to the industry standard, according to the respondent, of owning more than 50% of the commercial land used.

#### **4.3.2 *Organisational structure***

It was found that a major factor in the decision made by an organisation when choosing a preferred source of capital is determined by the organisation equity structure in terms of whether it is listed on the Johannesburg Stock Exchange (listed) or privately held entities (private).

This is primarily established within the listed companies where shareholders and parent organisations dictate the policies governing a capital allocation and source for a project.

#### **4.3.1 *Conclusion Pertaining to Proposition 1***

As seen in the section above the preferred source of capital to finance a capital project is debt. Although there are some situations where an organisations preferred source is equity, and thus approaching their shareholders, majority of companies prefer to finance their projects through borrowing from financial institutions.

Although a clear majority of respondents prefer to finance their projects through debt, 9 of 13 respondents, depending on the type of project as well as the current financial situation and external market issues, organisations use a combination of debt and equity.

## 4.4 Results pertaining to Proposition 2

The objective of proposition 2 is to determine the factors that influence capital expenditure decision making based on the technique used to evaluate a project or investment. These include those identified in the literature review namely, Internal Rate of Return (IRR), Net Present Value (NPV), Discounted Payback Period, Payback Period as well as other techniques not identified in the literature review.

This section used the themes as well as preferences identified in the literature review to guide the presentation of the result pertaining to an economic period of growth. The chapter summarises the technique used by the respondents as well as the factors that influence the decision making process.

As the manner in which the investments viability is determined is directly affected by the factors that influence capital expenditure decisions the individual techniques are presented in ranking order of preference.

### 4.4.1 *Techniques preference*

Respondents were asked to identify and rank in order their preferred capital budgeting technique(s) used to evaluate capital investment decisions. Table 4 below shows the ranking of the techniques identified when considered from a pre-economic recessionary period, i.e. a time of growth and sustainability.

**Table 4 : Traditional Techniques Used**

| Technique                     | Preference |
|-------------------------------|------------|
| Internal Rate of Return (IRR) | 1          |
| Payback Period                | 2          |
| Net Present Value (NPV)       | 3          |
| Discounted Payback Period     | 4          |
| Other                         | 5          |

The factors that influence the techniques are discussed below and help form part of an elimination Process based on techniques used where each technique helps define the final decision.

#### **4.4.1 Factors relating to the capital budgeting technique used**

##### **a. Internal Rate of Return**

A repeating theme in the interviews held with respondents who use the Internal Rate of Return, is the ease with which to use this technique. Respondents stated that it is easy to understand as it enables one too clearly compare the cost of capital as well as it provides a figure that can be easily ranked.

For publically listed companies though, the focus is more on shareholder value. Almost all respondents from publically listed companies stated that the Internal Rate of Return provides a management tool that enables them to meet shareholder expectations on the return of their investment. As a focus is placed on providing shareholders with generous returns, the technique enables the effective monitoring of these targets.

The main theme identified for the use of the Internal Rate of Return was;

*“Easy to understand, compares to cost of capital clearly, able to rank versus other capital projects, and ties in with the boards focus on shareholder value creation.”*

Company D respondent

*“As it is primary numerical in nature it is closely aligned with infrastructure fundamentals due to high value and long term assets given off stream of revenue during times of uncertainty for future capitalisation.”*

Company A respondent

*“IRR used as management team measured on what rate of return was earned by money.”*

Company H respondent

b. ***Payback Period***

The payback period in almost all interviews, is identified as a secondary heuristic technique to help support the Internal Rate of Return.

3 of the 13 respondents ranked the Payback period as their primary technique used in the decision making process. All are privately held entities, where the focus is more on the time than value of the return.

In all circumstances it is used as a means to demonstrate to the investors how long the project will take to yield a positive return and payback the initial investment. Furthermore as most companies fund their projects through debt, the faster they are able to get the funds back into the business the more opportunities they will have to re-invest the funds.

The main theme identified for the use of the Internal Rate of Return was;

*“As a heuristic, not as the primary decision making tool.”*

Company D respondent

*“Used primarily as there is a need to ensure that the investment is paid back within project life and to ensure project profitability.”*

Company J respondent

.

c. ***Net Present Value***

Although identified as the second preferred choice of technique in the literature review, when collating the results Net Present Value was definitively the third preferential technique to be used.

It is used by all respondents as a supportive technique to help bolster a decision made through either using the Internal Rate of Return or the Payback Period. In essence it is used to help scale down the decision making process. When asked for clarity respondents stated that;

*“As Net Present Value is the flipside of the Internal Rate of Return, we use as a part of our elimination process as the Internal Rate of Return is the Net Present Value at zero, but does not show the expected value return.”*

Company E respondent

*“Although it shows the growth, it does not show the return of the projected investment.”*

Company J respondent

d. **Discounted Payback Period**

Respondents who utilised the Discounted Payback period, are predominantly heavy cash focused businesses.

e. **Other Techniques**

There were three other techniques mentioned that are used by organisations to help assess their decisions. All of these techniques were used when the decision is too close to call. None of the below techniques are repeated in any other organisations other than those who utilise it.

i. **Strategic Intent / Corporate Strategy**

*“What will this investment do for me?”*

Company I respondent

*“What is the focus of this investment, return or saving?”*

Company J respondent

This technique and factor plays a key role for manufacturing companies who are a subsidiary of a global publically listed organisation. They are heavily driven by the groups' strategic intent and as such decisions are influenced by global strategy.

They focus mainly on additional sales potential and capacity growth. In essence what the investment will do for them.

The reason for this is due to the fact that in most project the capacity is already maxed out and if one is able to add capacity to a project one will automatically add profit directly to the bottom line.

f. ***Times Money Back***

This technique plays a role for a Corporate and Investment Banking organisation. Their focus is investing directly off the banks' balance sheet and as such they need to ensure a return on equity that can be maintained using the banks' capital reserves.

This technique for them is always used in conjunction with the Internal Rate of Return as one has to tie them up together.

#### **4.4.2 Non-Defined Factors**

During the interview process 4 main factors were identified as having the greatest impact on the capital budgeting technique used. These factors played a prevalent role in the decision making process according to most respondents.

In the questionnaire respondents were asked for their views on the major factors and as such unprompted responses were received. The prevalent factors in alphabetical order are;

**Table 5 : Factors affecting techniques**

| Main factors identified      |
|------------------------------|
| Assumptions                  |
| Ease of use of technique     |
| Information availability     |
| Other Factors to the process |

Assumptions play a major role as they have the ability to distort the final results both positively and negatively. As the process's involved in the final decision is one of mostly elimination, an incorrect assumption(s) can have an impact on defining the final decision.

A common theme was the ease with which one can use the technique to make an informed and accurate determination. This enabled the respondent to more accurately assess and demonstrate the benefit from investing in the decided area. Most respondents use scenarios to assist in their final decisions and as such the more accurate the source information the more relevant the techniques result is. The ease with which the benefits can accurately be determined and the ease with which the benefit could be demonstrated to decision makers is demonstrated in the accuracy of the determination.

When asked to identify the factors that affect the technique used for evaluation, a critical element mentioned by all respondents is the availability and accessibility of information. Without relevant and accurate information one cannot make an informed decision.

a. ***Other factors to the process***

Although there was no one key factor that was identified within the interviews, each respondent added value to identifying the key factors that affect the decision making process.

1. Availability of funds

Although this relates to the preferred source of capital as per Proposition 1, without funds regardless of their source, one cannot invest. However the availability of funds also has an impact on the decision making process with regards to the ability for those funds to generate a long term benefit for an organisation.

2. Management skills

It was found by many respondents that management intuition plays just as big a role in the justification of the final decision as the numbers generated by the technique.

It was also found that the more experienced a manager is, the more sophisticated the techniques used.

### 3. Fear to make a decision

Although this may be viewed as a soft factor, the risk of not making a decision is almost as important as how you make a decision. Elements affecting the viability of the project such as cost and time delays, switching costs etc. can play a negative role in making the decision.

As the risks are more easily identifiable, they can have a negative impact on the end result.

#### **4.4.3 *Size of the budget***

When asked if the size of the budget influence the project valuation process, almost half, 6 of 13, of the respondents stated that it did. All other 7 respondents stated that regardless of the budget allocation, the same techniques were used.

In certain situations, according to the respondents, depending on how much the project consumes of the total allocated budget, the level of authority to invest is affected, and as such a greater focus is applied to the variables associated with the relevant techniques.

According to one respondent when asked if size of the budget influence the project valuation process and if so why, they stated that the large projects pose greater balance sheet risk and thus impact nominal profit returns more. The capital budgeting techniques used require more diligence on soft factors, like execution, tactical approach, strategic gains, competitive advantages etc. The main impact, according to the respondent, is on the time allocated and soft factors considered when looking at the results of the different techniques.

Another respondent, from a financial institution, stated that although the size of the budget does not influence the valuation process it does affect the fundamentals in terms of deal cost and opportunity cost. The bigger the deal the greater one ability to spread overheads is increased. This is due to each project valuation requiring the same amount of work to be done and thus the same costs involved regardless of size. They stated that for this reason it is more economical

to investigate larger projects. However a risk that the affects this approach is realized when trying to obtain financial support for the project.

#### **4.4.4 *Conclusion Pertaining to Proposition 2***

From the data presented in the chapter, it can be clearly seen that there are quantitative and qualitative factors that affect the capital budgeting decision making process.

When determining which techniques were the most influential, the Internal Rate of Return is a clear favourite among a majority of respondents. Although the Payback period was the second most preferred technique, it is followed closely by the Net Present Value.

The main factors that affect the decision making process were identified and were mainly based on the assumptions relating to the technique, ease of use, information availability and other factors mentioned during the interview process.. The assumptions associated with the technique being utilised as well as the ease of which one can use the technique in question play a major role in the final results.

## **4.5 Results pertaining to Proposition 3**

The objective of proposition 3 is to determine the factors that influence capital expenditure decision making process during times of uncertainty. The focus for this proposition is based on the impact the global economic recession has had on the preference placed on each technique.

This section used the themes as well as preferences identified in the literature review to guide the presentation of the result pertaining to an economic period of uncertainty. The chapter summarises the technique used by the respondents in times of uncertainty as well as the factors that influence the decision making process during times of uncertainty.

The key themes identified in this proposition relate to the impact the global economic crisis has had on the organisation, the importance placed on techniques, ensuring that all risks have been identified as well as adapting the means to assess said risks.

### ***4.5.1 Impact times of uncertainty have on Capital budgeting within an organisation***

According to the majority of respondents, the global economic crisis influenced the decision of many companies due to 4 main elements. Firstly sales and revenue declined due to the economic recession which lead to a delay in acquiring new or replacement capital equipment. Secondly due to the economic situation banks became very strict in lending money for any purpose as their own liquidity came under pressure, thus making the funding of large acquisitions more expensive. Thirdly due to the restrictions on available funds fewer capital investment decisions could and still can be made due to lower capacity utilisation, lower competitive response, and innovation from other companies who due to economic climate also defer capital programs. Finally the recession shifted the fundamental focus from a growth strategy to an exit strategy.

However not all organisations interviewed had their capital budgeting decisions and projects affected in a negative manner. Some found that due to their cash

surplus position, they were able to accelerate their projects and acquisitions. A few took the strategic decision to prepare the organisation for future growth and the eventual return of the economy to a positive growth period.

Of all respondents interviewed, 3 found themselves in a financial crisis and instead of trying to grow the organisation through times of crisis, found themselves having to consolidate their investments. This resulted in all 3 disposing of existing projects and in some situations their subsidiary organisations to help weather the storm.

Respondents who were in a manufacturing environment and linked to a publicly listed company, stated that they actively looked to borrow money to ensure that the debt to equity ratios set by investors and the group were always maintained.

Unfortunately for 2 the depreciation in the currency as well as the downturn in the economy resulting in the parent entities disbanding their organisations.

#### ***4.5.2 Impact times of uncertainty have on the preference of each technique***

For 8 of the 13 respondents, the global economic crisis and the times of uncertainty had little to no impact on the preference of techniques used to value a project.

However all agreed that during times of uncertainty, the assumptions associated with each technique is affected.

For the other 5 respondents, not only did the period of uncertainty impact their decision making process, they were forced to review the importance of each technique.

This resulted in a heavier focus being placed on the Net Present Value as opposed to the payback period. Due to the limited availability of funding, the value of the project became of more importance than the period it would take to return the initial investment.

For this reason the Net Present Value outranked the Payback period. The other techniques were mentioned but seldom featured when respondents were questioned about capital budgeting techniques during a time of economic crisis.

**Table 6 : Techniques used in times of uncertainty**

| Technique                     | Preference |
|-------------------------------|------------|
| Internal Rate of Return (IRR) | 1          |
| Net Present Value (NPV)       | 2          |
| Payback Period                | 3          |
| Other                         | 4          |

#### **4.5.3 Identifying unique risks posed during times of uncertainty**

“Risk is not easily dimensioned and is the most important aspect of all business decisions. More important than IRR is the probability and impact of risks.”

Company E respondent

When asked about the unique risks faced by organisations during times of uncertainty, respondents stated that common risks to all were;

- Management risk due to poor management skills and staff
- Environmental elements such as areas and potential.
- Availability of clients in the service and construction industries.

However a few identified critical risks posed to their business as well as their partners; these included;

- Interest Rate risks as if the Reserve Bank decides to increase the lending rate a 05% increase can have a dramatic impact on the cost of the debt.
- Currency fluctuations due to international financing
  - With a depreciating currency this will have a major knock on effect on the cost of debt both local and foreign.

When asked how they assess the risk involved in a project during times of uncertainty, a number of sources of risk were identified and where most often the view of the investor themselves.

When asked directly how they assess risk when looking into the capital budgeting process, respondents stated that when assessing risks questions asked are;

- What are the risks of not achieving the expected IRR and thus return.
- Assess the risks in detail and then check all risk associated with project. Technical risk, financial risk, regulatory risk per country, legal risk with deal.
- Who will be the supplier for the project
- How will it be maintained in the future
- What is the local knowledge availability
- What is the foreign exchange impact to
  - The Project
  - Growth in sales
- What technology is required
- How will government react
- How will opposition react
- Effect opposite expansion that a listed company will report on
- How does it affect share price
- Market perception
- Does it grow top line

- Does it create an image of dominance or negative due to wanting to be views as the biggest
- Competition commission views

#### **4.5.4 *Conclusion Pertaining to Proposition 3***

From the data presented in the chapter, it can be clearly seen that there has been an impact on the capital budgeting decision process taken by organisations in a time of economic crisis.

This has had a direct impact on the supporting techniques used to value a project. In times of success there is a clear ranking as shown in Table 7, however as per Table 10 below the supportive preference in techniques has changed.

When asked about how they view risk both respondents identified both critical and common risks to all. This was further enhanced by the assessment of how to assess risk and the questions posed therein.

## **4.6 Summary of the results**

The respondents interviewed all were familiar with the research topic and were all in a position within the financial realm of an organisation. The positions were made up of Directors and Financial managers.

The results from the research confirm that capital budgeting techniques used within South African organisations have been marginally affected by the economic crisis.

It further shows that among the respondents there was a consistent preference to certain techniques and as such rank-order tables depict the priority placed on the capital budgeting techniques.

## **CHAPTER 5: DISCUSSION OF THE RESULTS**

### **5.1 Introduction**

The research seeks to identify the capital budgeting techniques used by organisations to support the decision making processes within South African Organisations and the factors that influence these decisions. The study further seeks to identify the impact the economic global recession has had on South Africa and identify the impact the crisis has had on capital budgeting.

This chapter is presented by re-examining the demographic profile of the respondents interviewed against including industries, corporate profile, respondents' designations as well as why the selected organisations were chosen using the convenience sampling method. The chapter further explores the results pertaining to Proposition 1, then 2 and finally 3 as they were discussed in Chapter 4: Presentation of Results.

The purpose of this chapter is to interpret and explore the results pertaining to this research, as discussed in Chapter 4: Presentation of Results, with the information gleaned from the literature review as presented in Chapter 2: Literature Review.

### **5.2 Demographic profile of respondents**

A variety of respondents were required in order to gain the insight required from the research. Due to the nature of the research topic as well as a perceived hesitation to be interviewed a convenience sampling method had to be used. As identified in section 3.2: Limitations to the Study, the nature of this research was a limitation in itself. This is due to organisations being reluctant to allow their staff to be interviewed on what is deemed a sensitive topic. As such where allowed interviews were taken.

This resulted in a spread of interviewees within different positions of the interviewed organisation as well as working within different industries. As mentioned the previous chapter, respondents came from 4 different industries.

All industries rely heavily on capital budgeting techniques to help enhance and support their decision making process.

The spread of industries as well as organisation type has had an effect on the results of the research. This is due to all literature reviewed focusing solely on listed companies. Due to the complexity of obtaining interviews, the research had to deviate slightly in the manner with which the literature reviews were conducted. This was also critical in obtaining an impartial view from the interviewees. As such both private and listed organisations were interviewed.

The actual spend was not measured as it was deemed to have no material impact on the research. As the focus was on the techniques themselves and not the financial considerations of the organisations interviewed, corporate financial information was never discussed.

### **5.3 Discussion pertaining to Proposition 1**

The research showed a clear preference amongst the interviewees to use debt as their primary source of capital to fund the projects chosen. This is primarily due to the fact that raising capital through equity, corporates have to be careful as they may dilute some of the shareholders ownership within an organisation.

In the literature review it was identified that there are five critical factors that influence the final decision made by organisations as to the source of capital. According to Ozkan (2001) they are size, non-debt tax shields, profitability and liquidity.

#### **5.3.1 Preferred source of Capital**

##### **a. Debt**

For the respondents who have a clear bias towards debt, when asked why majority stated that fact that they preferred not to dilute their shareholdings any further.

This supports the literature, where according to Firer et al parties (2009, 11), the use of equity or capital to raise funds dilutes some if the shareholders shareholding within an organisation.

For some respondents they would float their debt between markets to ensure that the most preferential interest rate is obtained.

b. ***Combination of Debt and Equity***

Contrary to the most respondents, those that preferred funding projects off their own balance sheet, mainly Private Equity organisations, stated that the decisions how and where to invest is driven by their gearing ratio. This enabled the organisations to ensure that the correct combination of debt and equity was in each project.

This is supported by the pecking order theory as organisations prefer to raise capital internally before looking outside the organisation (Brounen et al., 2004, 93).

This is the primary focus within organisations, according to Strebulaev (2007, 1770), where they have sufficient retained earnings to fund the desired projects.

### ***5.3.2 Conclusion Pertaining to Proposition 1***

Proposition 1 was designed to discover an organisations preference towards financing a capital based project. The research showed that although the choice is based on a corporate strategy, majority of respondents prefer to finance their projects through debt than through their own balance sheet.

This as per the literature review and stated by respondents themselves enable them to obtain tax benefits in interest expense deductions. However there are those that prefer to finance the project themselves as shown primarily within the Private Equity group of interviewee's.

## **5.4 Discussion pertaining to Proposition 2**

The research shows, as per the literature review, (Gitman and Forrester Jr, 1977, 68) (Graham and Harvey, 2001, 196) (Du Toit and Pienaar, 2005, 22), that the Internal Rate of Return followed closely by the Net Present Value are the two most preferred techniques used.

Below is an analysis of the literature analysing the techniques and within each study what the findings were.

### **5.4.1 *Techniques preference***

The research shows, as per the literature review, shown by Gitman and Forrester (1977, 68), Graham and Harvey (2001, 196) as well as Du Toit and Pienaar (2005, 22), that the Internal Rate of Return is by far the most preferred source of decision making with the range of assessment tools available. Although according to the research as shown by Gitman and Forrester (1977, 68), Graham and Harvey (2001, 196) as well as Du Toit and Pienaar (2005, 22) and supported by others, the most widely used tool to support the Internal Rate of Return is the Net Present Value, respondents in a pre-recessionary environment differed to the studies in that respondents showed a clear preference to the Payback Period.

All respondents agreed that although the Internal Rate of return is the primary source of analysis, majority preferred to utilise a Non-Discounted Cash Flow technique to help support their findings. Of those who preferred to use a different technique to support the Internal Rate of Return, all stated that as per Baker and English (2011, 4) the primary concern is the use of assuming the appropriate rates to use when discounting the future cash flows for a project.

However all agreed that the Internal Rate of Return due to the all-inclusive nature of the calculation is their primary source for decision making due to the ease with which the benefits can accurately be determined and the ease with which the benefit could be demonstrated to decision makers.

This is in line with Gitman and Forrester Jr (1977, 68) who stated that in their view the discounted cash flows are sophisticated valuation techniques as they “explicitly consider the time value of money”.

#### **5.4.2 Factors relating to the capital budgeting technique used**

##### **a. Internal Rate of Return**

The Internal Rate of Return among all respondents is the core technique used to assess any project. All respondents stated that the other techniques are used to enhance the decision making process, but all start with the Internal Rate of Return.

According to respondents the Internal Rate of Return is the most popular due to it's;

1. A respondent from the manufacturing industry stated that no other technique is as useful when determine the viability of a project due to their investments being fully funded by debt and as such they can only invest in a number of projects.
2. Ability to show investment return
3. Ease of use and understanding in comparing cost of capital for each project.
4. A respondent from the Banking industry stated that as this technique is primarily numerical it can be closely aligned to an infrastructures fundamentals due to high value and long term assets given off streams of revenue during times of uncertainty for future capitalisation  
Primary bench mark both real and nominal

These views are all aligned with the literature review and supported by the views of Gitman and Forrester Jr (1977), Weil and Oyelere (2006), Du Toit and Pienaar (2005), and Maritan (2001).

However there were a few concerns raised during the interviews with using the Internal Rate of Return when assessing projects. This is due to;

1. The techniques inability to provide the ability to asses multiple projects that yield a similar return.
2. Majority of the variables are assumption based and as such errors can be made.
3. Can never be used on its own

These concerns are aligned with the literature where Adler (2006) stated that although a useful tool the Discounted Cash Flow methods, primarily the Internal Rate of Return is limited. This according to Adler (2006) is aligned with the three main points identified above.

b. ***Payback Period***

The payback method, unlike the literature reviewed, in a pre-recessionary environment is the preferred secondary confirmation technique to be used by organisation.

As it is, according to respondents, a toll to be used to form a heuristic tool as it cannot be used as the primary decision making tool.

As the payback method is used to determine how long it will it take to realize the investments return and yield required growth, and as it is purely an empirical approach it cannot take the market factors into account as the Internal Rate of Return and Net Present Value. This view is shared by Brounen, De Jong and Koedijk (2004, 81).

This is contrary to the majority of literature reviewed where the Net Present Value was the preferred supportive technique to be used.

c. ***Net Present Value***

As stated above, unlike the literature, the Net Present Value was only used when one was unable to make a decision, after performing the Payback Period calculation.

This was mainly due to the fact that, as stated by one respondent, it is the flip side of the Internal Rate of Return as the Internal Rate of Return is the discount rate to make the Net Present Value equal zero.

As per, Firer et al. (2009, 292), Ryan and Ryan (2002, 4) as well as Kellerher and MacCormack (2004, 73), majority of organisations use Net Present Value to ensure that one is making more on the money than in another way.

Within the respondents the use of Net Present Value was used to determine which project with similar criteria yielded greater financial results. It is used to help scale down any list of potential investments when a clear favourite cannot be identified after using Internal Rate of Return and the Payback Period.

d. ***Discounted Payback Period***

As per Ryan and Ryan (2002, 10) discounted techniques are preferred by organisations today over non-discounted techniques. The general philosophy within these organisation is to generate profit as quick as possible and convert as much as possible into cash to pay dividends. For this reason they require to know how long it will take to be able to pay dividends with cash.

For organisations interviewed that are relatively cash positive, the overriding philosophy is one of generating profit and being able to convert as much as possible into cash to pay dividends. For this reason they need to know how long it will take to be able to pay dividends with cash.

This is the reason why some use this technique although majority stated that it is hardly used anymore.

### **5.4.3 Conclusion Pertaining to Proposition 2**

When identifying key factors relating to any of the techniques used, the key factors mentioned by most respondents are the;

- ease with which the benefits can accurately be determined
- ease with which the benefit could be demonstrated to decision makers
- Information availability or lack thereof.

This is due to the reality that it is very often not possible to isolate cash flows for specific capital equipment, which makes the analyses difficult and thus challenging.

Although majority of the interviews yielded similar information gleaned in the literature review, there were some differences that mainly relate to the choices made by the individuals within the organisations.

It became clear from the interviews that the organisations preference played a role in the choices made by the respondents, thus resulting in the Payback Period being a preference to the Net Present Value.

## **5.5 Discussion pertaining to Proposition 3**

Capital budgeting is affected in terms of expansion by the state of the asset markets, which are affected by the global crisis. Higher valuations drives capital disinvestment, and lower valuations drives acquisition expansion.

As per the literature reviewed, according to Bierman Jr and Hass (1973) when an organisation is faced with uncertainty, an organisation places a higher focus on the capital budgeting decisions as with the fluctuations in variables the results are difficult to quantify.

Among those interviewed the focus shifted from one of growth through expansion, to growing the company through leaner investments. This was due to the reality that during times of uncertainty the cost of capital increases, as seen in declining

asset prices. In more recent times, according to some respondents, (2010 – 2011) rates of return started dropping as growth rates outlook and inflation expectations decline.

This had an effect on the techniques used and how the results are viewed but not, according to all, how the end result is used.

This is supported by Bierman Jr and Hass (1973) who state that there is a lack of acceptable methods for an organisation to apply when “determining the amount by which the time value of money should be adjusted for risk” (Bierman Jr and Hass, 1973, 119).

#### **5.5.1 *Conclusion Pertaining to Proposition 3***

Contrary to the information regarding techniques used in a time of certainty, during times of uncertainty, the preferential techniques matched the more recent studies performed by Weil and Oyelere (2006), Du Toit and Pienaar (2005), and Maritan (2001).

The key element affecting organisations during times of uncertainty is the unreliability of the variables due to the changing economies. This is in accordance with Biondi and Marzo (2011) and Gervais (2009).

### **5.6 Conclusion**

The capital budgeting literature explained the scope of the use of techniques within organisations from around the world. The literature demonstrated how even with different economies and societies, capital budgeting is universal and as such each market yielded similar results.

Although the preference among the techniques has changed over time, in the past 20 years there has been a consistency among organisations as to their preferred choice.

However when operating in times of uncertainty and where markets are changing on a daily basis, organisations, although staying with their preferred choice, have shown an interest in utilising other techniques than those used in times of growth.

The research showed that there was an impact on the preference of the techniques due to operating within times of uncertainty.

## **CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS**

### **6.1 Introduction**

This chapter concludes the research presented above by presenting each Proposition and a summary of the literature reviewed as well as the summations obtained in the interview process.

The chapter then briefly discusses the Propositions and the findings there-in.

The recommendations section focuses on providing each of the stakeholders identified in the research with possible other uses for the techniques involved.

The final section suggests further areas of study and research uncovered by this Research Report.

### **6.2 Conclusions of the study**

In this section a summary of the findings will be presented within the context of the Research Report. Some differences were found with the published research as will be presented below.

#### **6.2.1 Proposition 1**

*Important elements in the capital budgeting decision will include the funding mix between short and long term debt, the capital structure of the firm in terms of the proportions of debt and equity; and the availability of funding for the proposed investment.*

The research has confirmed that as with the Trade-Off Theory, Pecking Order Theory as well as the Market Timing Theory, there are factors that influence the source of capital.

Although the literature did not identify a specific preference, the pros and cons of utilising debt or equity to finance a project were discussed.

The research demonstrated that among both publicly listed organisations on the Johannesburg Stock Exchange, depending on the overall group strategic outlook financial managers did not have much choice in where to find the funding for the projects.

Among those organisations that are privately held, equity was never a choice. All chose debt as they did not wish to dilute their existing shareholding in the own organisations. However in some cases, funds would be raised in equal shares from existing shareholder to help grow and financing the organisation.

### **6.2.2 Proposition 2**

*The factors that influence capital budgeting techniques are based on the manner in which the investments viability is determined and play a role in the capital budgeting technique used to perform a valuation as well as the budget allocated. In order to support decisions made using the preferred technique people will utilise other valuations forms to support the initial findings and will include a method that uses the time value of money such as Net Present Value, Internal Rate of Return or Payback Period techniques.*

The literature showed that during both times of growth and uncertainty, the preference among the techniques used to value a capital budgeting project did not change. As in accordance with the majority of literature, Table 11 below, the preferred technique to base all decisions on is the Internal Rate of return, followed by its opposite in the Net Present Value.

**Table 7 : Techniques preference identified in literature**

| Technique                     | Preference |
|-------------------------------|------------|
| Internal Rate of Return (IRR) | 1          |
| Net Present Value (NPV)       | 2          |
| Payback Period                | 3          |
| Other                         | 4          |

The research showed a difference in the preference of technique used among interviewed organisations. Although the primary technique used was still the Internal Rate of Return, a difference was discovered in the supportive techniques used. Unlike the literature reviewed where the Net Present Value was the preferred technique to support the findings in the Internal Rate of Return, among the respondents it was found that the Payback Period was more supportive.

This is consistent with the interviewee's considerations during times of uncertainty, however during times of growth a different view is held among the respondents as seen in table 12 below.

**Table 8 : Techniques used in times of certainty**

| Technique                     | Preference |
|-------------------------------|------------|
| Internal Rate of Return (IRR) | 1          |
| Payback Period                | 2          |
| Net Present Value (NPV)       | 3          |
| Other                         | 4          |

### **6.2.3 Proposition 3**

*The factors that influence capital budgeting expenditure during different economic environments are based on the degree with which one is able to trust the information provided and the impact they have on the capital budgeting techniques used. In order to provide more accurate and relevant valuations of the investments, one has to consider the variables impacting directly on the valuation technique as well as external elements such as external markets, exchange rate fluctuations and the interest rates.*

The research shows that when an organisation is operating during times of uncertainty, both local and foreign influences will have an impact in the manner with which they evaluate the potential capital investments.

In Proposition 2 it showed that although the preference for the primary evaluation techniques did not change the preference for the supporting technique did as per Table 12: Techniques used in times of uncertainty.

The global economic crisis was found to affect the decision making within organisation mainly due to 4 main elements. Firstly sales and revenue declined due to the economic recession which lead to a delay in acquiring new or replacement capital equipment. Secondly due to the economic situation banks became very strict in lending money for any purpose as their own liquidity came under pressure, thus making the funding of large acquisitions more expensive. Thirdly due to the restrictions on available funds fewer capital investment decisions could and still can be made due to lower capacity utilisation, lower competitive response, and innovation from other companies who due to economic climate also defer capital programs. Finally the recession shifted the fundamental focus from a growth strategy to an exit strategy.

The findings in this study suggests that there is room for further studies regarding how Capital Budgeting techniques can be to influenced during times of uncertainty to better enhance our understanding of how these techniques are used and the impact they have on decision making within an organisation. The suggestions will also focus on research to better understand how in times of

uncertainty, as has been seen around the world since 2008, a better understanding can be obtained

### **6.3 Recommendations**

Through the interviews it was identified that although the respondents take risk and adversity into consideration when making capital budgeting decisions, these factors are not considered when evaluating investments through the capital budgeting techniques available. Rather they are viewed as external factors that can or may affect the initial outlook of an investment.

It was found that the correspondents attempt to obtain as accurate as possible information with regards to the variables relating to capital budgeting techniques.

Hence the results from this study do not provide definitive recommendations to the stakeholders identified earlier in the Research Report, rather it has opened an avenue for further research.

The purpose of the study was to propose that the use of the capital budgeting techniques are affected when the economy move from times of growth to times of uncertainty and thus recessionary.

The study is designed to attempt to fill a gap in examining the impact the global economic crisis has had on capital budgeting decisions within an organisation and as such capital expenditure decision factors and types.

Insight has been derived from the interviews obtained regarding the factors that affect the capital budgeting decision making process however although it has shown that there has been an impact on the technique preference there was not enough conclusive data to support recommendations.

The purpose of this study was to propose that capital budgeting technique preferences are affected during times of uncertainty, which the research does suggest.

## **6.4 Suggestions for further research**

- As the research was not based in a specific market within South Africa due to the availability of respondents it would be of interest to conduct this research study on focused markets within South Africa.
- Due to the close proximity of the research and the South African economy entering a recessionary period post 2010 it would be of interest for a better understanding the recession will and has had on capital budgeting within South Africa.
- Due to the limitations of the study with regards to time and availability of correspondents the effect the recent times of uncertainty have had on projects of a capital investment nature would be of interest to investigate.
- It was identified during the interview process that organisations that form part of a group do not necessarily have to consider their capital structure as they are allocated a budget per year to invest as they feel fit. It would be advised to examine organisational structures and the difference in capital investment projects among subsidiary and parent organisations.
- As mentioned in the recommendations although organisation do consider the risk and adversity presented to them, it is not considered as a factor in the Capital Budgeting decision making process. It would be of interest to research the difference roles the variables play within each technique and how organisations react therein.
- It was interesting to note that the capital structure did not play a major influence in capital budgeting decision which is contrary to the theory. It would be interesting to pursue this fact however it was beyond the scope of this research. Therefore it is suggested that this be of interest for someone to pursue.

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## **APPENDIX A.**

### **Letter to respondents**

Dear [respondent],

I am currently in the process of completing a Master's in Business Administration (MBA) at the University of Witwatersrand, Johannesburg (WITS). One of the requirements to obtain an MBA is to compile a Research Report.

My research report centres around Capital Budgeting within a South African organisation and the techniques used to value a capital project.

I would be grateful if you would be able to grant me an interview, between 30 and 60 minutes, to discuss how your [respondents company] creates a capital budget. The interview will not involve any discussion around the details surrounding [respondents company] capital budgeting but will focus on the general manner in which [respondents company] goes about creating a capital budget.

I do understand that time is valuable and as such any time that you are able to contribute to an interview will be greatly appreciated.

Thank you for your assistance,

Yours sincerely,

Greg Stern

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## APPENDIX B.

### Questionnaire

#### PRE-2007 (TRADITIONAL POLICY)

1. I would like to start by considering the period before 2007 (the financial crisis). In order of importance, which capital budgeting technique or techniques did you (your company) use to evaluate capital investment decisions?

|                                 | Rank |
|---------------------------------|------|
| Average Accounting Return (ARR) |      |
| Discounted Payback Period       |      |
| Internal Rate of Return (IRR)   |      |
| Net Present Value (NPV)         |      |
| Payback Period                  |      |
| Profitability Index (PI)        |      |
| No Evaluation Preferred         |      |
| Other Methods                   |      |

2. Why did you select and rank each of those techniques?

## POST – 2007 (GLOBAL ECONOMIC CRISIS)

3. How has the global economic crisis affected capital budgeting within your organisation?
4. Has the global economic crisis affected the technique you use?
  - a. If so how and why?
  - b. Please re-rank, in order of use, the techniques below.

|                                 | Rank |
|---------------------------------|------|
| Average Accounting Return (ARR) |      |
| Discounted Payback Period       |      |
| Internal Rate of Return (IRR)   |      |
| Net Present Value (NPV)         |      |
| Payback Period                  |      |
| Profitability Index (PI)        |      |
| No Evaluation Preferred         |      |
| Other Methods                   |      |

5. For each technique identified
  - a. Please identify any benefits.
  - b. Please identify any shortcomings.
6. Does the size of the budget influence the project valuation process and why?
7. Is the capital budgeting technique used influenced by the type of project being valued and if so which technique suites which projects the best?
8. Which factors are critical to the capital budgeting process?
9. What factors affect the capital budgeting technique used and why?
10. How do you assess the risk involved in a project?
11. What is your preferred source of capital?