

Capital Budgeting Practices In Developing Countries: A Case Of Rwanda

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Abstract

This paper report results of a survey on the capital budgeting practices in Rwanda. A questionnaire seeking to assess the capital budgeting techniques, cash flow estimation was used in order to assess problems faced in applying theory to practice was distributed to 30 Rwandan companies these included the banking and non banking institutions. The study indicated that most firms use internal rate of return (IRR) and discounted payback period (DPBP). The study also found some ignorance on the application of cost of capital as most firms were found using the cost of equity when discounting their cash flows despite the fact that most firms were found financing their projects using both debt and equity. Inflation is also an area where firms have not paid much attention in their capital budgeting decision making. The study concluded by opening area for further research on how capital budgeting can be used in resource allocating in the budgeting processes in developing countries.

Keywords: Capital Budgeting, Discounted cash flow technique, Non discounted cash flow technique, Inflation, Risks and Uncertainties, Taxes

1. Introduction

This study focuses on the capital budgeting practices in Rwanda by looking on the capital budgeting techniques and the cash flow estimation. Capital budgeting is one of the areas that have attracted a lot of academic attention during the last decades and a lot of descriptive literature has emerged. Capital budgeting decision of the firm is of strategic importance not only for the growth of the firm but for the overall growth of the economy because such decisions involve the firm committing its limited productive resources to its production system as they strengthen or renew their resources. Therefore capital budgeting involves how resources should be allocated in the firm in order to maximise the shareholders' wealth capital budgeting decisions involves commitment of large amounts of money in a given project, and such decisions are hard to reverse without disturbing the organisation economically and financially

Although other functions of finance like the capital structure, dividend policy, working capital management are equally important to the financial manager but it is the fixed assets that define the business of the firm (Pandey 2004). For example a university is called a university because of the buildings and staff, a hotel is called a hotel because of the hotel building or a transport company is called a transport company of the vehicles it has. And therefore if wrong decision is made on the investment in these assets will lead the firm to lose a lot of money and therefore capital budgeting must be carefully carried out, the capital budgeting tries to determine whether a proposed investment or project will be worth more once it is in place than it costs.

Therefore capital budgeting can be defined as the efficient allocation of resources in the capital projects such that these projects can provide a return to the investors.

Capital budgeting practice is one of the vital inputs in investment decision making process of embarking on the investment projects. A very good analysis, scrutiny, evaluating, implementation and monitoring of such project could yield the expected results for the stakeholders. According to Dayananda et al (2002) the capital budgeting practice are used to make investment decision so as to increase the shareholders value. Capital budgeting is primarily concerned with sizable investment in long term assets, Brealey and Myers (2003) these assets may be tangible such as property, plant and equipment or intangible such as new technology, patent, research and development, design and trademark.

Capital budgeting is primarily concerned with sizable investment in long term assets Brealey and Myers (2004) these assets may be tangible such as property, plant and equipment or intangible such as new technology, patent, research and development, design and trademark. Capital budgeting decision have long term range impact on the strategic performance of the organization and are a key to the success or the failure of the organization. If the company does not invest in capital projects it may not be able to compete effectively and therefore it may be competed out of the market.

Capital budgeting techniques are stipulated decision rules that guide management on how to make investment decisions (Kaijege, 1994). They are measures of project's desirability in terms of profitability and economic feasibility. Various capital budgeting techniques have been progressively developed with time. The most generally known and used techniques are grouped into two major categories. i.e. conventional techniques and discounted cash flow techniques (DCFT). The convention techniques are those techniques which do not consider the timing of cash flows and they include the payback period and the accounting rate of return; the discounted cash flow techniques are those techniques which consider the timing of the cash flows and they include the net present value, the internal rate of return, and the profitability index. The payback period has been modified in order to consider the timing of the cash flows, but still has the problem of not recognising the cash flows after the pay back period. However these contemporary project appraisal procedures frequently do not include a formal valuation of real option (Jack Broyles, 2008). The contemporary project appraisal procedures treat the project as though they were stock or bond conventional (Richard and Bills, 2006). The

Discounted cash flow techniques do not provide the methodology for measuring the value of real options. The value of real option derives from the fact that managers have the right to make on going favourable decisions concerning the project's investment and subsequent operations.

The finance literature emphasises the evaluation and the selection stages of the capital budgeting process. It is not surprisingly that many techniques have been developed on evaluation of the project. (Hearth and Gale, 1999). The most crucial information for the capital budgeting decision is the forecast of cash flows, (pandey, 2002). Cash flows are critical inputs into the net present value analysis, (Ross and Jordan, 2006). Although they are saying that the cash flow forecast is critical in the net present value analysis, but the cash flow forecast is critical to any analysis that is used in the capital budgeting evaluation. Wrong forecast of the cash flows will result in wrong decisions made on the capital budgets on what ever type of the capital budgeting technique used. For example the Euro Disney in which the forecast indicated that it will get the profit in its first years and it ended making up losses in the first three years (Richard and Bill 2008). Although the techniques that were used to evaluate the projects were good, but the forecast of the cash flows was not good.

In addition to that to show the importance of cash flow forecast in the capital budgeting decision is the Euro Tunnel which was forecasted to cost 8.8 billion USD and it ended up costing 17.9 billion US dollar more than it was expected and they had expected 16.8 million passengers in a year and they ended up getting 4 million passengers, which made it not to realise profits as expected in forecast, (Brealey and Myer, 2006). Those two examples shows how important it is for the business to consider cash flows in its capital budgeting decision before even considering the evaluation technique to use. This is in line with what was quoted by Brealey and Myer, (2006) that a manager that “A manager has studied the evaluation technique is like a child with hammer every thing is a nail”. This due to the fact that the manager who knows the evaluation technique will only be thinking on how to evaluate without considering on what to evaluate.

Because the future is full of uncertainties managers must scan the environment in which they operate in. various factors affect the forecasted cash flows and these include the discount rate, inflation and risks and uncertainties.

1.1 Inflation

An inflationary environment affects both the expected cash flows and the cost of capital. Cash flows increase due to the increase in the general price level and the cost of capital rises since investors and debt holders require compensation for the decline in purchasing power (Levy & Sarnat, 1982). Several researchers have described how inflation affects investment decisions (Nelson, 1976; Van Horne, 1971).

Distortions caused by inflation mainly derive from the fact that inflation is not neutral. Cash flows are differently affected by anticipated inflation - some cash flows may rise faster, some may rise slower than inflation and some may stay unchanged (Drury & Tayles, 1997). Depreciation is, for example, calculated based on historical costs and does not adjust according to inflation, which results in a proportionally smaller

tax shield from depreciation⁸ (Van Horne, 1971). As described by Levy & Sarnat (1982) and Nelson (1976) the decrease in the depreciation tax shield influences the optimal level of capital investment as well as the NPV ranking of mutually exclusive projects that differ with respect to durability and capital intensity. Typically, rankings will change in favour of projects with lower durability and lower capital intensity at higher rates of inflation. Further, inflation also affects the optimal time period in replacement decisions.

It is hence vital to consider inflation. According to Van Horne (1986) and Bierman & Smidt (1993), inflation can be considered in investment analysis by using either nominal (money units) or real (purchasing power units) terms. They assert that the key aspect is that the analysis is done in a consistent manner. Nominal cash flows are to be discounted by a nominal discount rate and real cash flows are to be discounted by a real discount rate. If consistency is not accounted for the analysis will be biased, resulting in an under or overestimation of the profitability of the investment. A common mistake is that inflation's effect on the depreciation tax shield also depends on the chosen depreciation method.

$$NPV = \sum_{t=1}^t \frac{CF(1+\alpha)^t}{(1+r)^t(1+\alpha)^t} - I_0$$

Where CF is the expected cash flows in time t, r is the risk free rate and α is the inflation rate. The formula was formulated basing to the net present value technique, but research has indicated that companies' especially small and medium companies are using the pay back period to evaluate the project. Therefore this formula may not be applicable to companies that use the pay back period to evaluate their projects. One need to modify the formula such that the formula can still be used on the pay back period by multiplying the numerator with the expected cash flows as below. Although the finance literature considers payback period as a technique that considers the liquidity and risks of the project it does not a clear explanation on how inflation can be incorporated and therefore for countries that still use the payback period in evaluating projects they need to consider how inflation can be incorporated in the technique.

1.2 Taxes

Corporate taxes are actual cash outflows and must be accounted for when evaluating a project's desirability. Taxes reduce the expected cash flows and a failure to consider them results in an overestimation of the present value. When calculating the after-tax cash flows it is crucial to consider the tax shield created by depreciation (Pike & Neale, 1996). Tax regulations do, in this case, influence expected cash flows through the depreciation tax shield (Levy & Sarnat, 1982). The cost of capital should also be estimated after-tax. For levered firms the tax shield from interest rates has to be taken into account since it lowers the cost of debt.

The higher the tax rate, the lower will be the effective cost of using debt (Levy & Sarnat, 1982). Dividends are, in contrast, not tax deductible (Honko, 1977).

2. Determination Of The Required Rate Of Return

The required rate of return should reflect the opportunity cost of committing funds to a capital investment (Northcott, 1995). Theory generally dictates the use of a weighted average of the required rate of return of the individual sources of financing, with each type of financing being given its proportionate weight in the firm's long-run target capital structure. The justification for using the weighted average cost of capital (WACC) is that such a calculation ensures that the value of the existing owners' equity will be maximised (Levy & Sarnat, 1982). It is, however, important to note that WACC is an appropriate discount rate only for projects within the "normal investment activity" of the firm and where it will not, in itself, require any change to the firm's capital structure (Northcott, 1995; Ross et al, 1999). WACC is defined as follows:

$WACC = W_e K_e + W_d K_d$ where W_e and W_d are the weight of equity and debt respectively.

And K_e is the cost of equity and K_d is the cost of debt

The cost of debt is described by Levy & Sarnat (1982) as the minimum rate of return required by the firm's debt holders. When estimating the cost of debt they assert that the market cost of debt is always to be considered. Further, adjustments have to be made considering anticipated inflation, the tax shield due to the tax deductibility of interest rates and flotation costs if present. The tax shield lowers the cost of debt, while anticipated inflation and flotation costs typically result in an increase in the cost of debt.

The cost of equity capital can be defined as the minimum rate of return that a company must earn on the equity-financed portion of its investments in order to leave the market price of its stock unchanged (Van Horne, 1986). Most textbooks advocate the use of the capital asset pricing model (CAPM) when estimating the cost of equity capital. However, empirical studies have shown that other methods such as the prospective dividend yield, the earnings yield and the past return on shares are commonly used. The key drawback with these methods is however, that they do not consider risk in an appropriate way (Dimson & Marsh, 1982). $E(R_t) = R_f + \beta E(R_m - R_f)$, where $E(R_t)$ is the expected rate of return on firm's equity, R_f is a risk-free interest rate and $E(R_m)$ is the expected return on market (White et al, 1994; Ross et al, 1999).

3. Projects Risk And Firm Risk

According to financial theory a firm's cost of capital should reflect the market risk faced by the firm, which can be measured by its beta or sensitivity to general stock market movements (Brealey et al 2001). Due to

investors' diversification opportunities specific risk should not be accounted for. However, Dimson & Marsh (1982) argues that most modern firms are to some extent diversified, meaning that they are operating in a number of different businesses. Consequently, the market risk faced by the divisions may diverge. The required rates of return of the divisions should therefore also be different.

3.1 Incorporating Risks In The Project Cash Flows

As identified by Fabooze and Pamela (2002) that risk affects the project cash flows and the discount rate therefore it is very important to incorporate the risks in both the cash flows and the discount rate. Because of risks investors will increase the required rate of return on the project in order to compensate for the risks associated with the project by increasing the required rate of return and therefore this increase in the required rate of return must be reflected in the project's discount rate in order to reflect the risks associated with that project. In case of cash flows there is always a risk in variability of the expected cash flows which must be considered by considering certainty of the expected cash flows. The Finance theory has suggests two methods that which can be used in incorporating risk in the capital budgeting decisions. These methods are aimed are aimed at adjusting the NPV to reflect the certainty of the expected cash flows and the risk rate in the discounted rate. Although the finance theory recommends the of NPV in evaluating capital projects but practice has also shown that PBP is still widely used in evaluating projects and therefore these technique do not consider how should incorporate risks when PBP is used.

Certainty equivalent factor

According To Ross (2008) this methods incorporates the risk in the expected cash flows by multiplying the certainty equivalent factor in the expected cash flow and then discount them with the risk free rate to get the net present value. This will give the figure of NPV that is expected to get as certain.

$$NPV = \sum_t \frac{\alpha_t CF_t}{(1+r)^t} - I_0 \quad \text{where } \alpha \text{ is the certainty equivalent factor at time } t \text{ and } CF_t \text{ is the cash flow}$$

at time t I_0 is the initial investment and r is the risk free rate. The formula assumes a risk free rate but in the real world there is no risk free because even the government bonds have got some risks in time therefore this may make the formula less applicable in the real world.

Risk adjusted discount rate

According to Richard and Bill (2006) this method is based on the concept that investors will require a high rate of return on risky projects in order to compensate for the risk the project is creating. The difference between the risk free rate and the market rate is the risk premium and it is this rate that investors are willing to

accept in order to invest in the project. The adjusted discount rate will be to the risk free rate plus the risk premium and therefore the expected cash flows will be discounted with the adjusted discount rate to reflect the risks associated with the cash flows.

$$NPV = \sum_t \frac{CF_t}{(1+k)^t}$$

Where k is the risk discounted rate which comprise of risk free rate and the risk

premium and CF_t is the expected cash flow at time t.

Like the formula on inflation by Pandey (2004), the literature on incorporation of risks in the expected cash flows is also based on the discounted cash flow techniques.

The literature does not give evidence on whether these methods can also be used in the non discounted techniques which are still being used in practice as evidence suggests. In additional to that the literature does not provide a scientific way of determining the certainty equivalent factor which remain to subjective to the decision makers which may give biased information.

Finally the methods also assume that managers and investors are risk averse where by the investors will react to risk by increasing the required rate it ignores the fact that some managers and investors are risk aggressive and react to risk by diversifying the business. Therefore in this research, the researcher intends to test if the non discounted cash flow techniques are used by incorporating the risks that are associated with the projects.

Measuring the Project's Risks

A lot of literature has been written on how the project's risks can be measured. Although the certainty equivalent factor and the risk adjusted discount rate incorporates the risks into the cash flows, these techniques do not show the variability of those risks from the expected cash flows. It is within this framework that various techniques which measure the variability of risks as suggested by various scholars have been discussed. According to Brigham and Ehrhardt (2011) these techniques include the following;

Standard Deviation

The standard deviation measure the dispersion of the possible out comes of the projected cash flows. The wider the dispersion the higher the standard deviation this means that the project with higher standard deviation will have a higher risk. The standard deviation is equal to the square root of the difference between the probability of the expected NPV and the forecasted cash flow. The expected NPV is the summation of product of the cash flows with their probabilities. Like the certainty equivalent factor, the standard deviation

is also subjective. It uses probabilities which are assigned by the managers where by it is very easy to be manipulated by the managers in their interest.

Semi-Variance

Although the standard deviation shows the dispersion of the risk, it does not show the size of that risk. Therefore in order to determine the size of the risk the semi-variance method is used to determine the size of the risk.

Coefficient of Variation

Where projects differ in scale it may not be appropriate to use the standard deviation to measure the project risks this is because the standard deviations can not measure risks of the projects which are different in size and this necessitates to use the coefficient of variation to measure the risk and the lower the coefficient of variation, the lower the risk.

Although these techniques theoretically provide a good framework of measuring the risks of the projects, they use probabilities which can easily be manipulated by managers which can lead to a wrong decision. In addition to that the literature has also failed to build a frame work on the non discounted cash flow technique on how one can measure risks using the non discounted cash flow technique which continue to being used despite their theoretical short comings.

4. Measuring The Portfolio Risks

For many years the finance literature has regarded portfolio to be used in combining financial securities to reduce risks associate with a single investment since the research which was made by Markotwize however new researches has revealed that the portfolio risks analysis can also be used in the real capital investment (Richard and Bill 2006). If two assets are combined the risk of one asset may be absorbed by the other and then investor maximise the return. However there is still a puzzle of who should do the portfolio. Some investors prefer to diversify for themselves rather than allowing the managers to make the diversification. This may create a problem in funding of the organisation as managers will fail to utilise the internal funding since they have to pay managers their return and this may force the firm to go for external funding which may be expensive.

No research that has provided evidence on this puzzle. Although there is still a controversy on the portfolio we can not deny the fact that portfolio can help in reducing the risks in the investment decisions. This due to the fact that if there are two assets A and B and asset A has a high risk where as assets B has little risks. If one

invests in the two assets the high risks will be neutralised by investing in the small risk and hence increase the returns than one who may only invest in the either asset.

$ER_j = \alpha ER_A + (1 - \alpha) ER_B$ where ER_j on project J, αER_A is the expected return on asset A and ER_B is the expected return on asset B.

Techniques that Describe the Risks in the cash flow estimation

Although the standard deviation, semi-variance and the coefficient variation measures the size and the dispersion of risk, these techniques do not tell well which factor that has caused the deviation these techniques only indicates that there is a risk which needs to be addressed in capital budgeting decision. Other techniques have been developed to solve this problem Peter (2006), identified three techniques that can be used in describing the risk factor and these include; the sensitivity analysis, scenario analysis and simulation. Where as Brealey et al (2008) added on other two which include the breakeven analysis and the decision tree.

Sensitivity Analysis

The technique investigates what can happen to the NPV only when one variable is changed it helps managers to identify the margin of safety of each factor. In the sensitivity analysis other factor that affects are kept constant and the one factor is varied at a time to see how that factor affect the expected cash flows.

The sensitivity is mainly concerned with the what if questions like what if the market share drop or increase by a certain percentage what will be the expected cash flows. Although the technique can identify which factors are more risky as far the project is concerned, the technique does not provide a basis of rejecting or accepting the project. The analysis only shows that a certain factor is more risky than the other and therefore one still to the evaluation techniques to select the project.

The technique has been proved to be static since to only analyse one factor at time this make the managers to rely on their personal judgement. Although the technique is good but it may require managers to have more skills on how carry out break analysis and correlation which may it hard to be used in the small and medium business especially in the developing countries this therefore may make the technique less applicable in the developing countries.

Scenario Analysis

Un like the sensitivity analysis which analyse only one factor at a time, the scenario analysis analyses all the factors at once and find out how those factors which affects the expected net present value. The first step in

using the technique is to first determine the NPV, then recognise all the possible errors of these cash flows and then investigate the impact of different assumptions on the NPV.

Like the sensitivity analysis, the technique can not be used to evaluate the project alone. It can only be used to supplement other evaluation techniques by identifying the factors which affects the project's cash flows such that managers can consider them.

Simulation Analysis

The technique combines the sensitivity and scenario analysis in analysing risks in project cash flows it identifies the key factors which affects the profits and their interrelationship. The cash flows are embedded to show the key factors influencing both the cash receipt and payment and their interrelationship. Although the technique theoretically looks good, but in practice it may be hard and expensive to use especially small and medium business and also in the developing countries since it requires the use of computer software.

In addition to that relies on identifying the key variables and specifying the possible value for each variable. In practice this may lead to subjectivity leading to providing biased information.

Breakeven Analysis

This works like the sensitivity analysis, it analyses one factor at time. It mostly analyses cost, price, and sales volume and how they impact on profit. Is usually used to to show if the project breakeven in the accounting terms.

5. Corporate Strategy, Capital Budgeting Process And Performance

Capital projects should not be viewed in isolation but with in the context of the business, its goals and the strategic directions. The attractiveness of the investment proposal comes from different sectors of the business as identified by Martinsburg in his operational or functional strategy, (Neil, 2008).

To make good investment decision managers need to understand their firm's competitive advantage (Brealey et al 2008). A good strategy position the firm to generate the most value of its assets and the firm's growth opportunities therefore resources should be allocated to a well positioned firm. Even if the project evaluation techniques, cash flow forecast and screening and other capital budgeting process has been done well, but ignoring the corporate strategy in the decision making process will make the whole process un realistic.

Therefore understanding the corporate strategy of the firm will make the capital budgeting process more realistic. The current study has ignored the role of corporate strategy in the capital budgeting process, most

the study has concentrated on other capital budgeting process like evaluation techniques, cash flow forecast, implementation, monitoring and control.

Capital budgeting is another area of finance that has attracted many academicians and many theories and literature on capital budgeting has been developed since Shapiro' pioneering work in 1968. Capital budgeting decisions literature and theories involve a number of distinct stages or activities which may be termed as the capital budgeting process. These includes project search, goals and objectives, corporate strategy, cash flow estimation appraisal techniques implementation management options and monitoring and control (Brealey et al 2008). Each stage or activity has got an impact on the capital budgeting decision which in turn affects the performance of the firm. Throughout the decades, theoretical breakthrough have led the way to more complex theories and techniques that companies uses in capital budgeting decision practice (Ecole 2006). A lot of significant progress has been made in the literature of capital budgeting in order to bridge the gap between theory and practice ranging from the project idea to monitoring and control. However evidence suggests that most of the surveys in this area have been carried out by western world researchers, researchers in the developing countries have not shown much interest in this area of capital budgeting decisions despite of high importance affixed to capital budgeting decisions not only on micro terms but also on macro terms.

Throughout the decades, theoretical breakthrough have led the way to more complex theories and techniques that companies uses in capital budgeting decision practice (Ecole 2006). A lot of significant progress has been made in the literature of capital budgeting in order to bridge the gap between theory and practice ranging from the project idea to monitoring and control. However evidence suggests that most of the surveys in this area have been carried out by western world researchers, researchers in the developing countries have not shown much interest in this area of capital budgeting decisions despite of high importance affixed to capital budgeting decisions not only on micro terms but also on macro terms.

In all of these researches, on capital budgeting decisions and other finance decisions a lot of assumptions were made in order to arrive at a conclusion and these assumptions were developed basing on the economic environment of that country there is no literature to support the applicability of these theories and assumptions in the developing countries and therefore the literature developed is still questionable on whether it can be applied in the developing countries whose markets are just growing and others are not even defined.

In addition to that the literature or theory on capital budgeting which has been developed contains many do's and do not's that have been prescribed for by capital budgeting practitioners (Kaijege, 1994). However, there has been little evidence to show the practicability of these theories in developing countries, particularly in

Rwanda and on how firms practice the capital budgeting decisions. To make matters worse most developing countries always depend on the importation; they do not have an enduring technological base that can support the growth of their economies Ekegeh (2007) this is also in line of what Kaijege (1994) said that the capital budgeting technique were developed in economies that are different from that of Africa and therefore they need to adjusted before they are used.

6. Previous Studies On Capital Budgeting And Cash Flow Estimation

Early empirical research carried out in 1960s showed the non discounted cash flow technique like the pay back period were relied upon in making capital investment decisions (kaijege, 1994). Research findings by Istvan, (1961), Pforlmm (1963), Soldofsky (1963), and Christy (1966) shows the PBP was the most commonly used technique to evaluate the projects. Beginning early 1970s there has been a tremendous change in the use of capital budgeting techniques as more companies are going in for sophisticated capital budgeting techniques, not only in the western world but even in Africa also.

The Research by Klammer (1972), Gitman and Forrester (1977), Kim and Farragher (1981), Pike (1988) and Ross (1986). All these have indicated a change in the use capital budgeting techniques from non discounted cash flow techniques to more sophisticated techniques as evidenced by the current studies.

The previous studies have indicated a lot of changes in the use of capital budgeting techniques for the last past years.

The research carried out by Suzette and Howard, (2011) identified that the most popular used technique in South Africa is the NPV and IRR but continue to use the pay back period as a secondary technique. They also found out that some companies use multiple techniques in evaluating the project.

The study by George, and Diane, (1997) indicated that the net present value is not widely used in new industries and developing countries not because they lack knowledge about the NPV but rather the wide spread of violation of the assumption underlying NPV, the high risk/high return of capital investment and the decision making process employed in making investment decisions.

In the research carried out by Kaijage, (1994) indicated that most firms in Tanzania are using the net present value and the internal rate of return and the pay back period is continued to be used as a secondary technique but he found out a confusion on the use of discount rate as many companies were using the bank interest rate before tax to discount the cash flows.

The study on the use of capital budgeting appraisal technique in USA and UK has revealed that most firms are moving towards the trend of sophisticated capital budgeting techniques which includes the NPV and the IRR. (Colin and Mike, 1997) . But several writers have claimed that companies are under investing because they misapply or misinterpret the discounted cash flow techniques.

The study carried out by Pandey,(2002) on the use of capital budgeting appraisal techniques in India indicated that all companies except one were using the pay back period to evaluate the projects. The study also indicated that the reason for the use of discounted cash flows as secondary technique is the fact that they are difficult in understanding, using, and lack of qualified professional and unwilling of the top managers to use them. Although the finance literature recommends the use of discounted techniques in evaluating projects many companies especially small and medium in developing countries have continued to use the non discounted technique which creates a controversy in the finance literature. While developed countries are adopting sophisticated like weighted average cost of capital (WACC) , capital asset pricing model (CAPM), simulation and scenario analysis to discount and to assess risks in the expected cash flows, it is not yet well established how it is done Rwanda.

The study carried out by Basheer et al(2010) in Jordan there is a slow in the use of WACC as the discount rate. Most firms were using the cost of equity and the cost of borrowing. This also shows a contradiction from the theoretical part of the literature on capital budgeting decision as theory emphasise the use of WACC as the discount rate. The study also indicated that lack of experience and staff explains the reason why companies have not adopted the WACC as the discount rate. The study showed a few percentages on incorporation of inflation, lack of staff also explained why companies are not incorporating inflation in their study. The study also indicated that firms use different methods in analysing risks in the cash flows.

The study carried out by Truong and Peat (2008), the study indicated that most companies in Australia are using WACC and CAPM to discount the cash flows. This shows a big difference from those studies carried out in the developing and emerging markets.

The study by Verma and Batra showed that most companies in India are using WACC as their discount rate. The survey by the UK firms has shown an increase in the risk analysis technique in the capital budgeting decisions where the sensitivity and scenario are the being used most (Peter, 2006).

7. Methodology

Researchers used a deductive approach and a survey strategy was used in collecting data from respondents. The study was conducted in three provinces of Rwanda; these were the Northern, Western and Kigali central. The study was based on both public and private companies, and it also covered both banking and non banking institution. The researchers collected primary data using structured self administered questionnaire. The main reason for the research to use the structured questionnaire they are simple to use and administer. A sample of 30 companies was selected randomly from the two clusters that are the banking companies and non banking companies. Data was coded and analysed using statistical package for social sciences and then presented through the use of frequency tables.

8. Discussion Of The Findings

The purpose of this study was to assess the capital budgeting practice in Rwanda in order determine whether firms in Rwanda operate as per the finance theory and the following information was obtained.

Table 1

Which of the following techniques does your project use for evaluation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	ARR	1	3.6	4.0	4.0
	NPV	1	3.6	4.0	8.0
	IRR	7	25.0	28.0	36.0
	DPBP	7	25.0	28.0	64.0
	MIRR	5	17.9	20.0	84.0
	99	4	14.3	16.0	100.0
	Total	25	89.3	100.0	
Missing	System	3	10.7		
Total		28	100.0		

The researchers found out that discounted cash flow techniques are the most used techniques in Rwanda. Only one firm was found using the accounting rate of return but no firm was found using the payback period. This is in line with the finance literature which recommends the use discounted cash flow in evaluating projects. 28% of the firms indicated that internal rate of return and discounted payback period are the most

efficient techniques in evaluating capital projects whereas 20% use modified internal rate of return in evaluating capital projects. Although the finance literature puts more weight on the use of net present value in evaluating projects the study has indicated a different opinion as 4% of the firms indicated to be using the net present value in evaluating projects. Given the situation of obtaining some information that can be used in determining the discount rate one would have expected the payback and the accounting rate of return to be the most popular technique due to difficulties in determining market parameters like determining the market beta and the hurdle, could partly explain why the use of NPV is still small as compared to other techniques. Because the IRR gives less correct information for mutually exclusive project than the NPV and also the DPBP still has the some weakness similar to the of the PBP since it does not also considers cash flows after the payback period there is still a gap in the applicability of these techniques in Rwanda.

Table 2

Real options affect your budgeting decisions as well as capital budgeting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No idea	16	57.1	80.0	80.0
	99	4	14.3	20.0	100.0
	Total	20	71.4	100.0	
Missing	System	8	28.6		
Total		28	100.0		

Chen et al (2010) found that constructing firms and real estate agencies in china are earning profits as result of real options and studies have also indicated that firms in the developed countries have started applying the concept of real options in their capital budgeting decisions. The concept of real options in the developing countries seems to be new as 80% of the respondents indicated that they had no idea about the real options and no firm that was found using the concept of real option in Rwanda. This result shows ignorance about the flexibility of managers in making capital decisions and thus failing to capitalize on the benefits of real options in the capital budgeting decisions.

Table 3

Which of the techniques are used to discount the cash flows

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cost of equity	16	57.1	66.7	66.7
	WACC	4	14.3	16.7	83.3

	99	4	14.3	16.7	100.0
	Total	24	85.7	100.0	
Missing	System	4	14.3		
Total		28	100.0		

The study indicated that only 14.3% of the firms use WACC as discount rate in evaluating capital projects and 57.1% use cost of equity as the discount rate in evaluating projects no firms were found using cost of debt and the capital asset pricing model. Although most of the firms finance their projects using both equity and debt as evidenced by table4, many firms have continued to use only a single cost of capital in discounting their future cash flows.

Table 4

In which of the following ways does your organization finance its projects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	use of debts	1	3.6	3.6	3.6
	Equity finance	6	21.4	21.4	25.0
	Equity and debt	21	75.0	75.0	100.0
	Total	28	100.0	100.0	

This result shows a complete confusion and ignorance on the applicability of cost of capital in discounting the project cash flows. The cost of debt was completely ignored which implies that projects must generate enough cash flows in order to be able to pay the interest expenses. Although most firms were found using both equity and debt to finance their projects as indicated by 75% but on applying the cost of capital firms were using a single cost of capital. This shows an inconsistency in the applicability of the discounting rates.

Table 5

does your firm consider the effect of inflation when estimating cash flows

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	4	14.3	14.3	14.3
	Agree	8	28.6	28.6	42.9
	No idea	12	42.9	42.9	85.7
	Strongly disagree	4	14.3	14.3	100.0
	Total	28	100.0	100.0	

One of the factors which affect the capital budgeting decisions is the inflation. Inflation does not only affect the project cash flows in terms of purchasing power but it also affects the cost of capital since it affects the nominal interest rate it is therefore important for the decision makers to incorporate the inflation rate in their decision making. It is within this context that respondent were asked on how they incorporate inflation in their decision making. 42.9% had no idea on the incorporation of the inflation rate 14.3% do not incorporate 28.2% and 14.3% agreed that they incorporate the inflation rate in their capital budgeting decisions. The results show little knowledge about the implication of inflation in capital budgeting decisions which may lead to poor decisions to be made. Little knowledge about the incorporation of inflation is also evidenced from the responses where the respondents to provide the number of times they consider inflation in their decision and a mixed responses were received.

Table 6

RISK and UNCERTAINTIES

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	STRONGLY AGREE	5	17.9	17.9	17.9
	AGREE	20	71.4	71.4	89.3
	NO IDEA	2	7.1	7.1	96.4
	DISAGREE	1	3.6	3.6	100.0
	Total	28	100.0	100.0	

The study also analyzed on whether firms in Rwanda consider risks and uncertainties. The result shows that 17.9% strongly agreed 71.4% agreed 7.1% had no idea and 3.6% disagreed and the most used technique in assessing risks in capital budget were breakeven analysis simulation and decision tree. The following factors were also identified as important factors that cause the variability in their expected cash flows;

- i. price of raw materials
- ii. project life
- iii. High rate of saving and the monetary policy.

9. Conclusion

The results of the survey are neither conclusive nor generalizable instead it opens up area of capital budgeting for more definitive and targeted research in Rwanda. The findings of this research show that firms in Rwanda

are adopting the use of discounted cash flow techniques though there are still some inconsistencies on the applicability of those techniques as most firms are still using wrong discount rates in discounting the expected cash flows. More to that still few firms consider the impact of inflation in the capital budgeting decisions. Further research need to be carried out to approve the validity of these findings by looking on how capital budgeting can help developing countries in the efficient allocation of resources.

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