

## The Importance of Payback Method in Capital Budgeting Decisions

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### Abstract

*Purpose – To investigate the importance of using payback method in making capital budget decisions in relation to other appraisal techniques used for capital budgeting decision in organizations. The paper also included the examination of the importance of the payback method in relation to simplicity, manager incentive compensation and the size of the company.*

*Design/methodology/approach – The author used conceptual analysis using theories on payback period in which secondary data from past research in African, European and American companies were analyzed to determine the importance of the payback method in capital budgeting.*

*Findings – The analysis show that the payback method is preferred in appraising capital budget decisions in various organizations because of its simplicity, liquidity and risk assessment among many other advantages. Managers should complement payback method with other methods in order to make a sound investment decisions.*

### Keywords:

*Capital Budgeting, Payback Method, Payback Period, Net Present Value, Internal Rate of Return, Real Options Approach*

### Introduction

Capital budgeting involves allocating the firm's capital resources between competing project and investments. This valuation requires estimating the size and timing of all the incremental cash flows from the project. This reflects the riskiness of the investment and is measured by the volatility of cash flows and take into account the financing mix.

Ideally, businesses should pursue projects and opportunities that enhance shareholder value. However, because the amount of capital available at any given time for new projects is limited, management needs to use capital budgeting techniques to determine which projects will yield the most return over an applicable period of time. The author has discussed popular methods of capital budgeting which include net present value (NPV), internal rate of return (IRR), Real Option and payback period.

In this thesis work, the author examined the reasons why major decision makers in organizations still use payback period method despite its critics' objections. The results of analysis conducted in Europe, America and Africa have confirmed the widely acceptance of this method because of its simplicity, liquidity and the manager's incentives packages among others.

### Body

The real value of capital budgeting is to rank projects. Most organizations have many projects that could potentially be financially rewarding. Once it has been determined that a particular project has exceeded its hurdle, then it is ranked against peer projects. The highest ranking projects are implemented until the budgeted capital has been expended. The author has discussed four capital budgeting tools in this article

The value added by this thesis is twofold. Firstly, according to the author's knowledge a similar comprehensive study in the manufacturing industry currently has not been much done especially in Africa. Secondly, the thesis is not limited to just discussing financial criteria of investment project evaluation. The thesis project has also considered the investment decision process in general.

## Capital Budgeting Tools.

The author has focused on the capital budgeting decision making in corporate organizations. He applied four common capital budgeting decision tools to analyze past research data on companies in Africa, Europe and America. The tools discussed include the payback period, net present value (NPV) method, the internal rate of return (IRR) method and Real Options to substantiate the importance of using payback method in making capital budget decisions in relation to other appraisal techniques.

**Payback Period-** The payback period is the most basic and simple decision tool. T. Lucy (1992) on page 303 defined payback period as the period, usually expressed in years which it takes for the project's net cash inflows to recoup the original investment. The usual decisions rule is to accept the project with the shortest payback period.

Payback method does not measure overall project worth because it does not consider cash flows after the payback period. According to T.Lucy, (1992) payback period provides only a crude measure of the timing of project cash flows. The payback period is probably best served when dealing with small and simple investment projects. The author observed that the simplicity of payback period method should not be interpreted as ineffective. If the business is generating healthy levels of cash flow that allow a project to recoup its investment in a few short years, the payback period can be a highly effective and efficient way to evaluate a project. When dealing with mutually exclusive projects, the project with the shorter payback period is selected.

**Net Present Value (NPV)-** The net present value decision tool is a more common and more effective process of evaluating a project which the author has also analyzed. The article revealed that the NPV tool is effective because it uses discounted cash flow analysis, where future cash flows are discounted at a discount rate to compensate for the uncertainty of those future cash flows. He concluded that the independent projects are accepted when NPV is positive and rejected when NPV is negative. In the case of mutually exclusive projects, the project with the highest NPV is accepted.

Despite a strong academic preference for NPV, surveys indicate that executives prefer IRR over NPV although they should be used in concert. In a budget-constrained environment, efficiency measures should be used to maximize the overall NPV of the firm.

From a purely financial viewpoint, the NPV rule is consistent with the shareholder's objective of wealth maximization, because it exclusively uses cash flows in the calculations as well as considers the time value of money. It evaluates investment projects in the way as investors do (Shapiro, 2005). The NPV has several strengths and weaknesses. Though the method has a number of strength (Brealey, 2006, Shapiro, 2005, Ansari, 2000) the concept may be hardly understood due to its complexity (Shapiro, 2005). Selecting a suitable discount rate based on assumptions about a potential investment and considering an investment's risk may be difficult to comprehend for individuals without any financial training, background or experience (Ansari, 2000). The model gives a false sense of accuracy, since the computed present value is based on estimated and uncertain cash flows (Ansari, 2000)

**Internal Rate of Return (IRR)-** From the literature, the author defined that the internal rate of return is discounted rate that is commonly used to determine how much of a return an investor can expect to realize from a particular project. The author further stated that the internal rate of return is the discount rate that occurs when a project is break even, or when the NPV equals 0 and the decision rule is to choose the project where the IRR is higher than the cost of financing. The greater the difference between the financing cost and the IRR, the more attractive the project becomes.

The authors assertion confirms Brealey, 2006, p93 statement which states that internal rate of return rule is to accept an investment project if the opportunity cost of capital is less than the internal rate of return." The rationale behind this statement is that an investment project yielding more than its opportunity cost of capital has a positive NPV, thus it is worthwhile investing.

It's possible that two mutually exclusive projects can have conflicting IRRs and NPVs, meaning that one project has lower IRR but higher NPV than another project. These issues can arise when initial investments between two projects are not equal. Just as it is the case with the NPV, one of the

disadvantages of the IRR is the fact that the model gives a false sense of accuracy, since the computed present value is based on estimated and uncertain cash flows. The advantages of using the IRR are (Ansari, 2000)

**Real options** - Real options analysis values the choices - the option value - that the managers will have in the future and adds these values to the NPV. Real option analysis has become important since the 1970s as option pricing. The model is more sophisticated as mentioned by the author in his article. It provides flexibility to management – i.e. the actual "real options" – generically, will relate to project size, project timing, and the operation of the project once established.

It is noted that discounted cash flow and other methods essentially value projects as if they are risky projects/bonds, with the promised cash flows known. Using this model, managers have many choices of how to increase future cash inflows, or to decrease future cash outflows.

The analysis has shown that managers can use models such as the CAP or the APT to estimate a discount rate appropriate for each particular project, and use the weighted average cost of capital (WACC) to reflect the financing mix selected. A common practice in choosing a discount rate for a project is to apply a WACC that applies to the entire firm. However, a higher discount rate is more appropriate when a project's risk is higher than the risk of the firm as a whole.

## **Hypotheses**

The hypothesis have been confirmed for the most general methods and criteria. These methods and criteria are that companies prefer the use of the pay back method when they evaluate investment opportunities because of its simplicity and that the companies have to do with financial flexibility. The method chosen are related to the pecking order theory and budget. This confirms that companies apply both financial evaluation criteria and non-financial. In addition, the article reveals that both risk and uncertainty are considered when evaluating investment projects and that well-defined investment decision processes are employed when appraising projects.

## **Data Source and Method of Collection**

The author used theories on payback period method and past research work which companies used in appraising investment and he has used it as secondary data in order to be able to answer the questions raised in the research hypothesis.

The author used empirical studies and personal judgment to analyze data from the selected countries on how often the countries use the payback and other methods to reach a conclusion on why the country or the continent used the method in question. Furthermore the analyzed data has shown how each continent has favored the use of the payback method.

## **Method of Analysis**

The most suitable approach to prove the article objective and to gain insights into firm's investments is to collect and evaluate information from firms based on a combination of quantitative methods and qualitative methods. This combination allows for proving or rejecting the thesis' hypothesis and in addition to that provides a deeper understanding of firm's investment project analysis and investment decision making. Grønhaug (2005) states that quantitative methods allow for accepting or rejecting hypotheses in a logical and consistent manner. In addition, for inductive and exploratory research objectives of the thesis, qualitative methods are suitable (Grønhaug, 2005).

To agree with the above statement, the author analyzed secondary data from the result of the survey conducted among firms in Africa, Europe and America. Due to the number of expected results from the hypothesis, the author used a combination of quantitative and qualitative methods to provide the best possible result from the analysis.

## Findings

As the information in the article indicates, the author involved a formal process to provide guidance for evaluating investment projects and reaching decisions. This process and its application reflect the level of quality both companies want to be perceived with not only internally, but also by external stakeholders such as customers, suppliers and investors though the result of the research benefited mostly financial managers.

The author has managed to establish why payback method is often used indifferent continents and he managed to trace the reason why some particular continents prefer payback method, which is primarily based on the kind of industry that run the economy of such countries, a common example is the manufacturing industry.

The author noted that companies in advanced countries often use the payback method because of the capital structure while companies in Africa mostly tend to use the payback method mainly because of the availability of the internal funding

Further analysis of the research shows that the prevalent use of the payback period is more pronounced in the Europe, followed by North America and then Africa. The results show that European companies most often use the payback method followed by American companies and lastly the African companies.

There as on the African companies were rated last is due to the fact that one of the African countries (i.e. Nigeria) showed a high rate in the use of the payback method while the other African country (i.e. South Africa) showed a very low rate in the use of the payback method.

The article has revealed that from the past reports how is that manufacturing companies in Europe and American companies often used the payback period, compared to other sector of the economy. The author concluded that the issue of the relevance of the use of the payback method is motivated by the importance of the payback method which includes the size of the business, the goal function, the management attitude to the pecking order theory and the simplicity of using the method.

Also from the data obtained, the simplicity of the payback period has motivated the use of the method. Managers normally will want to use a very simple formula to make their investment decision. Although developed countries are now more interested in using some complicated formulas like real option, NPV, IRR but the conclusion is that the simplicity of the payback method made it to be easily understood and this has motivated the general use of the payback method. The risk taking of the finance manager also indicate why the payback method is often used.

The above observation by the author confirms what (T.Lucy, 1992) on page 303 where he noted that payback method favors quick return projects which may produce faster growth for the company and enhance liquidity. He further observed that choosing projects which payback quickest will tend to minimize those risks facing the company which are related to time. However, not all risks are related to time.

The author also pointed out that the size of company also motivated the use of the payback method. The companies that are small survive mainly on investment that can generate immediate liquidity and the major investment method that supports this idea is the payback method which also confirms (T. Lucy, 1992) observations.

The valuation of managers has also motivated the use of payback method. From the article and personal judgment, managers are biased on the investments that generate immediate cash flows, because this is what their bonuses are attached to. The major reason for this kind of attitude is that most businesses are run on loan and overdraft. The exorbitant interest rate most especially in African (Nigeria) will make managers use appraisal method that consider liquidity first before profit.

## Reviewer/Author Arguments

Different scholars have conducted research on the usage of different financial evaluation method of investment projects in firms throughout the world. The surveys indicated a clear trend towards the application of the more sophisticated discounted cash flow methods such as the NPV and the IRR.

Bierman (2007) calls the increasing popularity of applying discounted cash flow methods and thereby replacing the payback period and the ARR as the first revolution in capital budgeting. However, (Shapiro, 2005) observed that the payback period still remains popular, especially as a secondary method to evaluate a potential investment project and this confirms the findings of this article. The observation of (Shapiro, 2005) confirms (T. Luncy, 1992) on page 303 that in spite of any theoretical disadvantages, payback is undoubtedly the most popular appraisal criterion in practice.

In his article (Kayali, 2006) argues that the pure usage of the traditional investment project evaluation metrics (payback period, ARR, IRR, NPV) assume that the management of a firm is passive, not reacting to any changes that may occur. As more information about an investment project becomes available, management could revise the investment project. Kayali (2006) therefore promotes the usage of real options in combination with the conventional project evaluation metrics “to account for the opportunities arising as the uncertainty about the project under consideration is resolved” (Kayali, 2006, p286).

The above statement by Kayali (2006) suggest that the choice of investment project evaluation techniques depends on a number of factors, for example, the survey conducted in Nigeria shows how investment methods are combined together, it was observed that the payback method was often used, which accounted for 98.9%. The author failed to generalize the conclusion on how the methods are being used in the African countries since both surveys conducted in Africa revealed contradictory rates (i.e. the result of the survey done in Nigeria had a very high rate while that conducted in South Africa had a very low rate).

We can draw lessons from Kayali (2006) that some project evaluation requires combination of a number of methods to avoid conflicting results. (T. Lucy, 1992) page 303 acknowledged that numerous survey have shown that payback is a popular technique for appraising projects either on its or in conjunction with other methods.

The evidence of the data from the South Africa survey has only shown when the payback period is used only as an investment appraisal and the author could not conclude based on that because if the payback period is considered as additional method the percentages would have been higher.

Shapiro (2005) argues that the ultimate aim of capital budgeting is the market value maximization of a firm's common stock, thereby maximizing the wealth of a firm's shareholders.

In conclusion based on the assumptions above, it must mean that a firm must never accept any potential investment project that does not maximize the market value of a firm's shares. As a consequence each individual investment project has to illustrate if the investment maximizes shareholder's wealth and thereby considers shareholder's interests irrespective of the method applied.

In addition to financial evaluation methods for project appraisal discussed by the author in this article, the evaluation of investment projects should also consider criteria of a nonfinancial nature. However, as these criteria are mainly intangible, it is hard to value them in financial terms making it difficult to determine their effect on the success or failure of investment projects. These criteria are difficult to quantify and to measure (Ansari, 2000)

It is apparent from the surveys shown in Exhibit 9.4 page 242 of (Colin Drury, 2005) that firms use a combination of appraisal methods. The study of Pike (1996) indicates a trend in the increasing usage of discount rates. The Drury et al, (1993) study suggests that larger organizations use net present value and internal rate of return to greater extent than the smaller organizations. The Dry et al. study also asked the respondents to rank the appraisal methods in order of importance for evaluating major projects. The larger organizations ranked internal rate of return first followed by payback and net present value where the smaller organization ranked payback first, internal rate of return second and intuitive management judgment third. Based on these past research findings, managers should complement payback method with other methods in order to make a sound investment decisions.

## **Future Research**

The research conducted is not without its limitations or shortcomings as noted by the author. This suggests that there are areas in which work presented here can be advanced and improved upon. One such area is to extend the sample size as only two countries were tested in each of the three continents. This thesis has focused on only corporate manufacturing firms and ignored the small firms and other industries. This suggests several areas for additional work. One such area is investigating of other firms rather than manufacturing with a bigger sample size. Though this is a limitation of this study but it is not thought to colour the results presented.

## **Conclusion**

In conclusion, putting all these analyses together, it is evident that companies prefer the use of payback method and also the empirical analyses indicate how this method has gained patronage among other investment methods in the industry. The analysis show that the payback method is preferred in appraising capital budget decisions in various organizations because of its simplicity, liquidity and risk assessment among many other advantages. The manager's incentives packages has been another reason why managers has retain this old method in practice since managers will always want to use appraisal method that will support their incentive plan which it always link to accounting earning.

The author has also demonstrated that managers should consider both risk and uncertainty when evaluating investment projects. Managers should complement payback method with other methods in order to make a sound investment decisions.

In addition to financial evaluation methods for project appraisal discussed by the author in this article, the evaluation of investment projects should also consider criteria of a nonfinancial nature though it is hard to value them in financial terms.

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