www.ijemr.net ISSN (ONLINE): 2250-0758, ISSN (PRINT): 2394-6962

Volume-6, Issue-5, September-October 2016
International Journal of Engineering and Management Research
Page Number: 278-280

Methods of Evaluating Investment Proposals

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ABSTRACT

Capital budgeting is the decision making procedure for establishing whether or not a company should invest in projects such as new facilities or products. This paper presents the most important methods of capital budgeting; The paper evaluates the strategic viability of fixed-asset investments in terms of costs and benefits to be achieved.

Keywords--- Capital Budgeting, PVC, present value benefits, cost of capital, ARR, NPV,PI, Internal rate of return

I. INTRODUCTION

Capital budgeting plays an important role in strategic financial management of organizations. This research paper focused on a number of variables and associations relating to capital budgeting. Importantly, organizations take necessary actions to ensure that the decision making criteria that the organization is used support the business's strategy and that support to gain the competitive advantage in the business environment. Making efficient and effective decisions on resources especially on financial resources always require managers to be based on informed decisions. Due to rapid development of both systematic and non-systematic methods of capital budgeting procedures, organizations do not always make decisions based on informed in formation[1][4].

Capital budgeting decisions are of paramount importance in financial decision making as long time period working, irreversible nature, involvement of large amount of funds, risk analysis and effective in profitability[3].

II. TECHNIQUES OF CAPITAL BUDGETING

A firm may have various investment proposals for its consideration depending upon following proposals:

- Accept reject decision
- Mutually competitive decision
- Priority order decision

The above decision proposals can be further enhanced by applying following criterias for capital budgeting that is important in financial decision making[4][5].

1. Accounting profit criteria:

- Accounting Rate of Return method

2. Cash flow criteria

- Payback period
- Net present value method
- Internal Rate of Return Method
- Profitability index

2.1 Payback period:

The payback (or payout) period is one of the most popular and widely recognized traditional methods of evaluating investment proposals, it is defined as the number of years required to recover the original cash outlay invested in a project, if the project generates constant annual cash inflows, the payback period can be computed dividing cash outlay by the annual cash inflow.

Payback period = Cash outlay (investment) / Annual cash inflow = C / A

Advantages:

- A company can have more favourable short-run effects on earnings per share by setting up a shorter payback period.
- The riskiness of the project can be tackled by having a shorter payback period as it may ensure guarantee against loss.
- As the emphasis in pay back is on the early recovery of investment, it gives an insight to the liquidity of the project.

Limitations:

- It fails to take account of the cash inflows earned after the payback period.

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- It is not an appropriate method of measuring the profitability of an investment project, as it does not consider the entire cash inflows yielded by the project.
- It fails to consider the pattern of cash inflows, i.e., magnitude and timing of cash inflows.
- Administrative difficulties may be faced in determining the maximum acceptable payback period.

2.2 Accounting Rate of Return method:

This is a percentage value of the average rate at which a fixed asset can generate benefits over its economic life. Management is responsible for setting the ARR for accepting capital investments. The Accounting rate of return (ARR) method uses accounting information, as revealed by financial statements, to measure the profit abilities of the investment proposals. The accounting rate of return is found out by dividing the average income after taxes by the average investment. Accounting rate can be calculated as following[6]:

ARR= Average income/Average Investment

Advantages:

- It is very simple to understand and use.
- It can be readily calculated using the accounting data.
- It uses the entire stream of incomes in calculating the accounting rate.

Limitations:

- It uses accounting, profits, not cash flows in appraising the projects.
- It ignores the time value of money; profits occurring in different periods are valued equally.
- It does not consider the lengths of projects lives.
- It does not allow for the fact that the profit can be reinvested.

2.3 Net present value method:

The net present value (NPV) method is a process of calculating the present value of cash flows (inflows and outflows) of an investment proposal, using the cost of capital as the appropriate discounting rate, and finding out the net profit value, by subtracting the present value of cash outflows from the present value of cash inflows. This is simply the present value of benefits less the present value of cost. PVC is the initial cost of a capital investment. The equation for the net present value, assuming that all cash outflows are made in the initial year, can be calculated as:

$$\text{NPV}=\frac{CF_1}{(1+K)}+\frac{CF_2}{(1+K)_2}+\ldots\ldots\ldots+\frac{CF_n}{(1+K)^n}\text{ - IO}$$

Where CF1,CF2…. represent cash inflows, K is the firm's cost of capital, IO is the cost of the investment proposal and n is the expected life of the proposal[4][6].

By the above equation the paper results that if NPV is positive, the project can be accepted, if negative it cannot be accepted and if zero, the project may be accepted only if non financial benefits are there.

Advantages:

- It recognizes the time value of money
- It considers all cash flows over the entire life of the project in its calculations.
- It is consistent with the objective of maximizing the welfare of the owners.

Limitations:

- It presupposes that the discount rate which is usually the firm's cost of capital is known. But in practice, to understand cost of capital is quite a difficult concept.
- It may not give satisfactory answer when the projects being compared involve different amounts of investment.

2.4 Internal Rate of Return Method:

Internal rate of return is a prescribed rate at which the potential earnings of a capital investment asset are determined based on the present value of cash flows that the investment will generate during its economic life.

It is called internal rate because it depends solely on the outlay and proceeds associated with the project and not any rate determined outside the investment, it can be determined by solving the following equation:

$$\text{IRR}= d_l+ \frac{NPV\ at\ d_l}{NPV\ at\ d_l - -NPV\ at\ d_h} \times\text{difference in discount rates}$$

Where d_l denotes lower discount rate, d_h denotes higher discoumt rate.

Advantages:

- It considers cash flows over the entire life of the project.
- It satisfies the users in terms of the rate of return on capital.
- Unlike the NPV method, the calculation of the cost of capital is not a precondition.
- It is compatible with the firm's maximising owners' welfare.

Limitations:

- It involves complicated computation problems.
- It may not give unique answer in all situations. It may yield negative rate or multiple rates under certain circumstances.
- It implies that the intermediate cash inflows generated by the project are reinvested at the internal rate unlike at the firm's cost of capital under NPV method. The latter assumption seems to be more appropriate.

2.5 Profitability index:

The profitability index measures the ratio between the present value of benefits and the present value of costs to establish the viability of a capital investment asset.

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When calculating the PI, you simply divide the project's present value benefit by the present value cost.
The formula to calculate profitability index (PI) or benefit cost (BC) ratio is as follows:

$$PI = \frac{PRESENT\ VALUE\ OF\ CASH\ INFLOWS}{PRESENT\ VALUE\ OF\ CASH\ OUTFLOWS}$$

If PI is more than one, project can be accepted, if less than one than rejected and if equal to one than project can be accepted only on basis of non financial considerations[2][4].

This method gives due consideration to the time value of money. It is also used to choose between mutually exclusive projects by calculating the incremental benefit cost ratio.

III. CONCLUSIONS

Capital Budgeting is a growth area of research. The main objective of research is to find out the most important capital budgeting techniques. The paper revealed that even if the large organizations are tend use combination of both discounted and non-discounted methods of capital budgeting techniques, still these large organizations tend to rely on discounted cash flow techniques. Among the discounted cash flow techniques NPV and IRR are the most commonly used techniques of large business organizations in capital budgeting decision making.

However, in short, this paper concluded that the capital budgeting is a process of making decisions for investment in long term assets.

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