Project evaluation case study

Business, Company

Importance of capital budgeting process

The capital budgeting process facilitates the financial management duty of allocation of finances and decision making on investment choices. With limited amounts of capital, financial managers are required to advise on the most appropriate business investment opportunity to pursue. The capital budgeting process suffices for the identification of the best alternative for investment. Through the capital budgeting process, financial managers are able to compute the expected cash flows in various investment options. Through the discounting methods, they are able to accurately estimate the expected cash flows and settle on the most profitable in consideration of the market dynamics such as the required rates of returns, the risk factors, among others.

Payback period

Project A:

Year

Inflow ($)

Cumulative inflows ($)

The payback period falls in year 5, assuming the cash-flows accrue evenly throughout the year, the duration would be known by:

10000/ 90000 = 0. 1111

Hence payback period = 4. 1111 years.

Year

Inflow

Cumulative inflows

Payback period falls in year 4, assuming the cash-flows accrue evenly, the period is obtained by:

Hence payback period = 3. 75 years.

The payback period set by the company is 4years, consequently, project B should be adopted.

QUESTION 3

Discounted payback period

The discounted payback period factors in the real time value of money. It, therefore, involves the discounting of cash flows. The discounting is done using the discounting factor at the required rate of return which is 11%.

Project A inflows (undiscounted)

Project B inflows (undiscounted)

Discounting factor(1+r)-n

Discounted project A inflows

Cumulative project A inflows

Discounted project B inflows

Cumulative project B inflows

Project A= the cumulative inflows at the end of year 5, which exhausts all the inflows is $ 278834. This is below the initial outlay of $310000. The project does not attain a payback.

Project B= the payback period falls in year 5, assuming that the inflows accrue evenly, the duration is calculated by:

Hence payback period = 4. 6064

Use of payback period or discounted payback period

The methods of payback period and discounted payback period have the inherent weakness in that they overlook the other inflows that would accumulate beyond the payback period. As such, they should not be used in the capital budgeting process. This is because the company would not be making the best decision that would meet the objective of the company, which is usually the object of maximizing the shareholders wealth. The natures of projects vary in the sense that they may accumulate cash flows unequally. There are projects that accrue fewer amounts in the initial years of investment, but would later accrue to the company more amounts that would effectively achieve the wealth maximization objective. These projects would be rejected if the payback period was the single method employed in the decision making process. In accepting or rejecting the projects, the company is better advised to use other parameters other than the payback period.

Net Present Value

Year

Project A inflows (undiscounted)

Project B inflows (undiscounted)

Discounting factor(1+r)-n

Discounted project A inflows

Cumulative project A inflows

Discounted project B inflows

Cumulative project B inflows

The net present value = present value of cash inflows – present value of cash outflows

Project A = 278834 – (310000) = (31166)

Project B = 345038 – (310000) = 35038

The net present value of project A is $ (31166). Only projects with positive cash flows should be accepted. Therefore, the project should be rejected.

The net present value of project B is $ 35038. The project should, therefore, be accepted.

Logic behind the net present value

The net present value considers the discounted values of all the total inflows against the discounted values of all the total outflows. The difference between the two sets of values represents the profit or the loss of the investment. The beauty in the net present value method is that it incorporates the time value of money through the discounting method. The rationale, therefore, lies in the fact that it considers all the related cash flows which have been discounted and hence the most accurate at the point of decision making.

Profitability Index (PI)

Profitability index = Present value of future cash flows

Initial outlay

Project A:

PI = 278834 = 0. 8995

Project B:

PI = 345038 = 1. 1130

310000

The profitability index of a project should be more than 1. 0000 for the company to accept the project. The profitability index of project A is 0. 8995 which is below 1. 0000 hence the company should reject the project. The profitability index of project B is 1. 1130, which is above 1. 0000 hence the company should accept the project.

Consistency of the Net present value and the Profitability index

Net present value approach is absolute in the sense that it deals with the actual amounts involved. On the other hand, the profitability index is a relative measure. It, therefore, employs the use of ratios to compare outcomes in a scenario. It should be appreciated that the profitability index's use of relativity could occasion conflicts with the Net present value use of absoluteness. For example, the net present value of a project could be zero, this would equal to a profitability index of 1. 0000 which would be acceptable using the profitability index method. The net present value method should be used since it is an absolute measure.

Effect of the required rate of return increase on the project's net present value and profitability index

The required rate of return determines the discounting rate used in discounting the cash inflows that be employed in the calculation of the net present value and the profitability index. It should be appreciated that the higher the required rate of return, the lesser the discounting factor. Therefore, the decreasing effect on the cash inflows upon discounting would increase. This is because the discounting factor is solely responsible for the value of inflows to be posted. The effect of the decreased value of the total discounted cash outflows on the net present value is a net decrease in the value of the net present value. In the profitability index, the numerator in the ratio, usually the cash inflow would be lower. The effects of a lower numerator will be a consequential decrease in the outcome of the ratio since the denominator remains constant. Hence the final effect would be the reduction in the value of the profitability index.

Internal rate of return

Internal rate of return = L + (NL / NL- NH) (H-L)

Where:

L = lower rate of interest

NL= net present value at lower rate of interest

NH= net present value at higher rate of interest

H = higher rate of interest (return)

L = lower rate of interest (return)

Hence Net present value at lower rate at 11%

Project A = (31166)

Project B = 35038

The net present value at a higher rate of return, say 20% would be calculated as follows:

Year

Project A inflows (undiscounted)

Project B inflows (undiscounted)

Discounting factor(1+r)-n

Discounted project A inflows

Cumulative project A inflows

Discounted project B inflows

Cumulative project B inflows

Internal rate of return:

Project A = 7. 3305%

Project B = 14. 879%

For a project to be accepted, the internal rate of return should be higher than the required rate of return. In these cases, the required rate of return is 11%. Project A has an internal rate return of 7. 3305%. This is lower than the required rate. The company should reject project A. Project B has an internal rate of return of 14. 879%. This is higher than the required rate of return. The company should accept project B and reject project A.

Effect of change in the required rate of return on the internal rate of return

The changes in the required rate of return are inconsequential to the internal rate of return. This is because the calculation of the internal rate of return does not depend on the required rate of return. However, the project evaluation decision making process would be based on the internal rate of return obtained compared to the company's cost of capital. As such, for the project to be accepted, the company's cost of capital must be lower than the internal of return. Consequently, changes in the required rate of return only affect the decision making process as it is the cost of capital that is used to compare against the internal rate of return in decision making.

Recommended project for the company

Payback period

Discounted payback period

Net present value

Profitability index

Internal rate of return

A

4. 1111years

Decision criteria

Accept if lesser than arbitrary set

(company set 4years)

Accept if lesser than arbitrary set

(company set 3years)

Accept if greater than 0. 0000

Accept if greater than 1. 0000

Accept if greater than the required rate of return.

Accept reject

Accept B, reject A.

Reject both A and B.

Accept B, reject A.

Accept B, reject A.

Accept B, reject A.

Recommendation

The company could employ any of the techniques indicated above in deciding on which project to pursue. However, it should be appreciated that the company’s main objective is to eventually maximize the shareholders wealth. The best technique to employ in the achievement of that objective is the net present value technique. The final result indicates the amount by which the shareholders; wealth would be maximized. Using that model, the company is best advised to accept project A which would lead to a net present value of $ 35038.

References

Correia, C., Flynn, D., Uliana, E., & Wormald, M. (2011). Financial Management. New York: Juta.

Harris, P., & Mongiello, M. (2012). Accounting and Financial Management. New York: Routledge.