# UTILITY OF PROJECT APPRAISAL TECHNIQUES IN BACKWARD REGIONS IN JHUNJHUNU DISTRICT OF RAJASTHAN (INDIA) – A GENERAL REVIEW

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**Abstract**

*Purpose: Project appraisal refers to the process of assessing in a structured way, the case for proceeding with a project or appraisal. In short, project appraisal is the effort of calculating a project's viability. The purpose of present study is to investigate the impact of project appraisal techniques on the profitability of small projects in backward regions of the society. Small projects like opening a new primary school, manufacturing firm, an extension branch of any main bank or postal office etc. are the main sources of*

*employment for the people in these backwards regions of society and contribute to the economy and development of the nations to a great extent.*

*Methodology/Approach: The study used survey data generated from a few projects in the Pilani, Morwa, Raila, Dhindwa, and Ghumansar regions of Jhunjhunu district in Rajasthan (India) to analyse their capital budgeting practices. The study ascertained, by statistically testing the hypothesis of the study, that the investors in small projects in these areas do not use project appraisal techniques while evaluating their proposed projects. A multiple regression analysis was employed to confirm the impact of project appraisal techniques on the profitability of these projects.*

*Findings: The study concluded that the use of project appraisal techniques has a positive impact on the profitability of these projects. Recommendations were made to improve the managerial and financial skills of the investors undertaking these projects.*

*Research Limitations/Implications: The research was limited to only the regions of Jhunjhunu District. People were mostly uneducated and were unaware of the benefits of using project appraisal techniques. If properly employed before undertaking any project these techniques can be very useful for these villagers and society as a whole.*

## INTRODUCTION

In today's economy, one has to calculate all the costs and benefits before undertaking any large scale project. Even at the time of opening a firm, if project appraisal techniques are put in place the profit the firm will make can be significantly

increased. One of the most significant strategic decisions that must be taken before undertaking any project is how to allocate scare investment resources amongst the various areas of the project. Traditionally, capital budgeting methods have been used to evaluate and justify advanced manufacturing technology. In this context capital budgeting is defined as the process of analysing, evaluating and deciding whether resources should be allocated to the project or not. Capital budgeting decisions are crucial to a project's success for several reasons. Firstly, capital expenditure typically requires large outlays of funds. Secondly, firms must ascertain the best way to raise and repay these funds. Thirdly, the most capital budgeting decisions require a long term commitment and finally, the time of capital budgeting decisions is crucial.

As in most of the developed and developing nations, small firms and the project they undertake continue to make substantial and ever increasing contribution to economic activity and employment. The avenues through which these contributions manifest themselves include manufacturing, creativity, innovation and competitiveness, all of which are distinguishing attributes of small projects and investors in these projects. The contribution of small manufacturing sector in India is estimated to be around ten percent (10%) of the Gross Domestic Product (GDP) and further eighteen percent (18%) of the employment sector. Especially in developing countries these small projects are being viewed as the engine of economic growth and are thought to play crucial role in technological innovation and employment creation. Further, it can be said that relative to larger ones, small projects are better placed to react to the challenges of increased competition and globalisation of the markets. Smaller projects are more innovative, flexible and entrepreneurial which enables them to react speedily to opportunities and threats.

Over the years, all over the world it has been observed that small projects play an important role in the economic and social development of a country. There is worldwide consensus that high rate of economic growth contribute to economic and social development and poverty reduction. At the same time, there is a growing recognition that a reduction in poverty depends on quality of growth, its composition, distribution and its sustainability of small projects in a country. These small projects undertaken in mostly urban areas of India are vehicle by which the lowest income earner of the society gains access to economic opportunities at the time when the distribution of income and wealth in India is amongst the most unequal in the world. In India as in many developing and semi-industrialised countries the main problems experienced by the investors in such projects, is the difficulty in accessing business finance. In the current Indian socio-political context the "excess to finance" issue becomes even more topical and sensitive to unemployment, with the result that income and wealth inequality levels continue to increase.

The appraisal of new and existing investment projects is fundamental to the success of small projects. The financial literature advocates the net present value (NPV) as the principal model of project appraisal. In a perfectly competitive market, the value of the firm is maximised when the projects with high value of net present value (NPV) are selected. It is deduced from this that the way to maximise a firm's value is to make good and unbiased estimates of the present value of projects.

The effective allocation of resources is crucial for success of any project. Most theorists hold that the effective allocation of resources can be best achieved through a well evaluated investment process. Such a process will enhance the profitability of making good investment decisions by helping to ensure that a corporate strategy is followed, that all investment opportunities are considered and that ad hoc decision making is minimised. Most accurate and reliable capital budgeting is needed by investors in small villages if they are to grow, remain competitive and optimise the value of their projects.

**BACKGROUND: AN OVERVIEW OF PROJECT APPRAISAL TECHNIQUES**

Capital budgeting, which can be described as the formulation and financing of long-term plans for investment, is one of the most important responsibilities of the owners of small projects. The decisions made during the capital budgeting process determine the future growth and productivity of the project. Capital budgeting is a process designed to achieve the greatest profitability and cost effectiveness in the private and public sectors of the economy. Capital budgeting and the estimation of the cost of capital (the rate of return that a firm must earn on its investments to ensure that the minimum requirements of the shareholders are met) are the most important financial decisions facing owners/managers of the any project.

The need for relevant information and analysis of capital budgeting alternatives has inspired the evolution of a series of methods to assist entrepreneurs in making the "best" allocation of resources. Amongst the earliest methods available were the non-discounted cash flow methods and the discounted cash flow techniques. The non-discounted cash flow methods are form of capital budgeting techniques used in evaluating the uncertainty and risk of the value of a firm without considering the time value of money. These techniques are biased in selecting projects and also do not consider cash flows in investment decisions. The techniques constitute the traditional payback period (PB) and the accounting rate of return (ARR).

**Traditional payback period (PB)**

CIMA defines payback as 'the time it takes the cash inflows from a capital investment project to equal the cash outflows, usually expressed in years'. When deciding between two or more competing projects, the usual decision is to accept the one with the shortest payback. Payback is often used as a "first screening method". This

implies that when a capital investment project is being considered, the first question to ask is: 'how long will it take to pay back its cost'?

**Accounting rate of return (ARR)**

The accounting rate of return is the ratio of the project's average after-tax income in relation to its average book value. Accounting rate of return (ARR) evaluates the project based on standard historical cost accounting estimates. The accounting rate of return also referred to as the book rate of return, bases project evaluation on average income and on accounting data rather than the projects cash flows. Unlike the payback period, this technique produces a percentage rate of return figure which is then used to rank the alternative investments.

Discounted cash flow analysis on the other hand is a method of evaluating an investment by estimating future cash flows and taking into consideration the time value of money. This is also called capitalization of income. The discounted cash flow technique requires both an understanding of compound interest and an ability to set out the inflows and outflows likely to result from a particular decision to invest. Maximizing a firm's value is dependent on correct investment choices, thus management needs sound and reliable tools to minimize the risk of poor investment decisions. The changing nature of global markets and the high interest rates paid on borrowed money by the small investors in a dynamic environment necessitated the need to examine the merits of different types of discounted cash flow techniques which are explicitly discussed below.

**Net present value**

This is the present value of cash flows discounted at the cost of capital, less the investment outlay. An understanding of various project evaluation techniques provides the investor with valuable tools for determining which projects, if any, should be accepted or rejected. The net present value is a popular technique for investment decision because it is a financial measure that ascertains the time value of money invested in a business.

**Internal rate of return (IRR)**

This is a project appraisal method which uses discounted cash flows in order to decide on the viability of long term investments. If the IRR is greater than the project's cost of capital or hurdle rate, (the required rate of return in a discounted cash flow analysis) the project will add value to the company. The internal rate of return (IRR) technique is that rate of return which equates the present value of the future cash inflows to the present value of the cash outflows.

**Discounted payback period (DPP)**

The discounted payback period method takes into account the time value of money. The discounted payback period represents the time it takes for the present value of a project's cash flows to equal the cost of the investment.

**Profitability index (PI)**

This investment evaluation method is used to evaluate proposals for which net present values have been determined. The profitability index is determined by dividing the present value of each proposal by its initial investment. The Profitability Index is also referred to as the benefit cost ratio. A project is acceptable if its PI is greater than 1.0 and the higher the PI, the higher the project ranking.

**LITERATURE REVIEW AND HYPOTHESIS**

The most important issue that need to be dealt with is the identification of reliable techniques for project decision making process. More accurate and reliable capital budgeting is therefore needed by the investors in new projects if they really want to make their project a success in the present competitive scenario. Project appraisal

techniques are probably one of the least understood tools of financial management and as a result, one of the least used by small entrepreneurs. Theoretical framework of this study is based on the Modigliani and Miller's neo classical theory of finance and investment as discussed below.

## Modigliani and Miller's theory on investment

Modigliani and Miller argue that managers should ignore financing and dividend decisions as irrelevant and focus on positive net present value (NPV) investment opportunities that would maximize the value of a project. Thus the analytical framework for determining a project's NPV as derived from discounted cash flows analysis came to provide a rational basis for collective decision-making. The classical theory by Modigliani and Miller identifies evaluation methods as a tool for maximizing the profitability of the small projects. Hastie's theory on the contrary regarded the financial theory that recommends the utilization of sophisticated techniques such as net present value to improve decision making and maximize the value of the project as unwarranted. Hastie objected to these assumptions because there are many more "apparently acceptable" projects that a firm can approve either because of limited capital or raw materials or because of limited management or technical talent which is common amongst small firms. Hastie noted that the use of incorrect assumptions has been a more significant source of bad investment decisions than the use of simple measurement techniques. Investment decision making could be improved significantly if the emphasis were placed on asking the appropriate strategic questions (important) and providing better assumptions rather than on increasing the sophistication of measurement techniques.

Adler argued in his theory that discounted cash flow should be removed from financial theory as it is increasingly irrelevant to contemporary business practice and can be dangerous in evaluating proposed projects. He further illustrated that discounted cash flow can be used accurately from the position of hindsight, but it is little help in predicting the future course of business. He argued that a "gut feeling" can be put to better use than strict mathematical models of potential profits in

deciding to pursue a new venture. He concluded that discounted cash flow is meaningless and as such should not be applied in evaluating capital budgeting decisions or rather should be replaced with less restrictive and more optimistic methods. The internal rate of return (IRR) method assumes re-investment of the funds at the IRR. Finally, the net present value (NPV) method requires an appropriate discount rate to value expected cash flows. The NPV method may underestimate the value of the investment project and may cause the management to pass up valuable investment opportunities, therefore, in general, they do not provide owner/managers with the flexibility they need when making strategic investment decisions.

Brink stated that turnovers of small projects in backward areas of developing countries are low and are decreasing because of factors such as small market size, low demand and a lack of sufficient knowledge on competitors. Investors rarely conduct marketing research on their competitors and the needs of their customers. They also suffer from marketing factors such as insufficient marketing, misreading of customers' trends and needs and poor location. The high level of illiteracy among the owners/managers of small projects in these developing countries, suggest that the lack of application of project appraisal techniques will have a negative impact on their profitability. Consequently, it is hypothesized that:

H1: Investors in small project do not consider project appraisal techniques while making investment decisions.

H2: These techniques if used have a positive impact on the growth and profitability of such projects.

**RESEARCH METHODOLOGY**

**Data Collection**

Most of the data was collected by conducting personal interviews of the villagers. Self-administered questionnaires were also used as a major source of the data collection, though only personal interviews could help wherever the villagers were illiterate. This involved a direct face-to-face meeting between the researcher and the respondents. This allowed the researcher to visit the small projects' owners/managers in the study area. The questions in the questionnaire were divided into sections A to D, which comprised of twenty questions covering four major areas. These questions were tailored to achieve the objective of the study. In order to achieve a good response from the above mentioned questions, the researcher employed both the structured and unstructured types of questions in the questionnaire.

The instruments for open ended questions were developed on the basis of literature review discussed earlier. In addition, the instruments were also based on literature review that suggested several points regarding different context and different country, which stressed more on cultural background.

Probability sampling method was used for the study. Probability sampling involves selection methods in which all the members of a sample are chosen through a random process. In probability sampling each of the members in the population has a known, non-zero chance of being included in the sample. Simple random sample was used to draw a sample of twenty five of the population.

**Data Analysis**

Multiple regression models was used to test the applicability of the suggested hypothesis that the use of project appraisal techniques are beneficial for any investment decision .To test this hypothesis, data was collected from the villages and mean values were calculations were performed for the dependent and independent variables.

The multiple regression model final put to use is:

$$R = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \varepsilon_1$$

Where;

R = Returns (profitability)

$\alpha$ = constant

$\beta_1 x_1$ = the effect in Rupees of the payback technique

$\beta_2 x_2$ = the effect in Rupees of the accounting rate of return technique

$\beta_3 x_3$ = the effect in Rupees of the net present value technique

$\beta_4 x_4$ = the effect in Rupees of the internal rate of return technique

$\beta_5 x_5$ = the effect in Rupees of the profitability index technique

$\beta_6 x_6$ = the effect in Rupees of the discounted payback technique

$\beta_7 x_7$ = the size of the project.

$\varepsilon_1$ = the "noise" term reflecting other factors

**FINDINGS**

The Results produced by multiple regression models are in good agreement with both the hypothesis. Excel Solver was used to obtain the final results that indicate a positive relationship between profitability of the project and the use of project appraisal techniques. Out of twenty five selected projects, only approximately 10% villagers used project appraisal techniques before undertaking the project. Therefore hypothesis H1 that the small project owners do not make use of project appraisal techniques is true to be a good approximation.

The profitability is measured by the returns (R) on the invested money. The returns as a measure of profitability was determined based on evaluation of the earning after interest and taxes and total assets. Table 1 (ANOVA) shows that project appraisal techniques play an important role in determining profitability of any project.

The coefficients table (Table 2) shows that the value of $\beta$ for PB and ARR are negative (-6.209 and -5.512 respectively) which indicate a negative relationship between profitability and use of these techniques. The other methods ($\varepsilon 1$) used by these owners may have a negative or positive relation with profitability of the project. In present case it was found to be positive.

"Other" project appraisal techniques, as can be seen from the Table 2 have a positive relationship with the profitability of the project and thus hypothesis H2 is also true to a great extent.

It can therefore, be concluded that both the hypothesis were true and project appraisal techniques, if used, can have a good impact on the projects undertaken in the Jhunjhunu district of Rajasthan (India).

Table 1. ANOVA

| Model | SS | df | MS | F | Sig |
|---|---|---|---|---|---|
| Regression | 605.882 | 7 | 84.382 | 4.112 | 0.01 |
| Residual | 1450.221 | 17 | 20.521 | | |
| Total | 2056.103 | 24 | | | |

Table 2. Coefficient

| Model Coeff. | | Std. Err | t Stat | P-value |
|---|---|---|---|---|
| Const. | 7.512 | 10.212 | 0.500 | 0.718 |
| ARR | -5.512 | 3.222 | -2.081 | 0.071 |
| PB | -6.209 | 6.030 | -2.100 | 0.045 |
| NPV | 4.322 | 5.631 | -1.753 | 0.099 |
| IRR | 8.213 | 7.211 | -3.122 | 0.009 |
| DPB | 15.213 | 12.113 | -3.208 | 0.005 |
| PI | 40.221 | 2.512 | 4.500 | 0.000 |
| Others | 0.812 | 1.821 | 0.650 | 0.611 |

**CONCLUSION**

The primary objectives of the study were to investigate the reasonability of suggested hypothesis. The results indicated that mostly villagers do not make use of project appraisal techniques. In addition, the results indicated that the use of project appraisal techniques has a positive impact on profitability.

The recommendations of the study are as follows: Camps should be organised in villages and towns for the skill development and training of the villagers. Training assistants should be used to help the investors in small projects. In addition, low levels of financial literacy can impact the degree to which entrepreneurs use project appraisal techniques. The government should broaden its efforts to ensure that a high level of financial literacy is universal to entrepreneurs. Government agencies should organize training camps for people of far fledged areas who are willing to take

investment decisions. Awareness should be created for the training programmes through advertisements in local and national media.

Also, the provision of expert advice can help entrepreneurs. Accountants should provide this advice. Government should consider subsidizing accountancy advice for villagers. Non-governmental organizations should be well funded through local and international grants to help with the training need of new entrepreneurs. Training seminars can also be organized. Furthermore, a "learning from peers" or mentorship approach can be instituted by government agencies to help new entrepreneurs. The involvement of mentors particularly through the Regional Development Agencies can be developed. Business should look at using non-executives at an early stage to bring external expertise and guide investment decisions. Further studies could investigate if industry differences and the age of the firm could have a major impact on the use of project appraisal techniques.

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