



# DECISION TREE APPROACH FOR CAPITAL EXPENDITURE DECISION - A TOOL FOR EFFECTIVE STRATEGIC HUMAN RESOURCE MANAGEMENT

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## ABSTRACT

*Strategic Human Resources Management aims at integrating strategic management with human resources management by aligning company objectives with people management systems.*

*In the contemporary competitive business environment, companies aim at maximizing shareholder wealth. In this context, viewing selected human resources function as investments yielding tangible and intangible benefits, hence earning returns to the organization and contributing to shareholder wealth creation becomes very relevant. When employees are viewed as variable costs of production there is little recognition and incentive to the firms' contribution to their training costs or costs of recruiting and training their replacements. Hence strategic HR*

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professionals and scholars have been advocating the investment perspective for HR. This brings us to the field of corporate finance; in particular project appraisal further specifically capital budgeting decisions, under risk and uncertainty.

Decision tree analysis is one of the techniques for analysis of capital expenditure under risk and uncertainty. It is specifically useful for evaluating a number of proposals.

An attempt is made in this paper to apply this technique to the field of Strategic Human Resources Management. Further an attempt is made to demonstrate this in the context of a real life situation in a Bangalore based IT company.

**Key Words:** Strategic Human Resources Management, Decision tree, Capital Budgeting, Investment.

## 1. Introduction

It is well known in Corporate Finance literature that whenever one deals with investment analysis, one has to confront with a situation of many investment proposals competing for scarce resources. In fact Project Appraisal and Finance starts with idea generation for competing projects (Investment proposals). Hence there are a number of alternative investment proposals available for a decision maker.

Techniques for evaluating capital expenditure proposals popularly known as capital budgeting decision are well established in Finance literature, and are extensively used by finance professionals. Research in this field at the international level is also well known to finance scholars. Capital expenditure decisions under risk and uncertainty are based on the concept of discounted cash flow theory and also probability theory. This theory is equally well developed, extensive research at the international level is already carried out.

Decision tree analysis is one of the techniques for analysis of capital expenditure decisions under uncertain conditions (pandey 2010). An attempt is made in this paper to apply this concept of use of decision tree analysis for capital expenditure decisions under uncertain condition to the field of strategic Human Resource Management. In what follows, we use the terms Capital budgeting decisions, capital expenditure decisions and investment decisions inter changeably.

## 2. Strategic Human Resource Management and need for investment perspective

HRM practitioners and management scholars have long advocated that human resources should be viewed from an investment perspective. Current practices in many organizations indicate that employees are viewed as valuable investments yielding tangible and intangible benefits and hence earning returns to the organization and contributing to share holder wealth creation. However some still view their employees as variable costs of production while physical assets are treated as investments (Greer 2001). When employees are viewed as variable costs of production there is little recognition of the firm's contribution to their training costs or the costs of recruiting and training their replacements.

Similarly there is little incentive to provide training or make other investments in them. Hence HR management scholars and practitioners have been advocating the investment perspective for HR.

Strategic human resource management refers to the process of developing practices, programmes and policies that help achieve organizational objectives. It is essential that the programmes, policies and practices need to be aligned with organizational strategies. Strategic human resource management considers the implication of business strategy for all human resource functions within the firm by translating company objectives into specific people management systems.

The key concept is consistent, that is essentially all the HR programmes and policies are integrated within a large frame work helping achieve firm's objectives.

To-days business environment is highly competitive. It is natural that in such an environment firms aim at maximizing shareholder wealth in the long term. In the short term however some other corporate objectives may get priority. When firms are maximizing shareholder wealth in the long term, all business functions including human resource function need to justify their cost. Needless to say HR managers have to consider cost and benefit tangible and intangible in quantitative terms, it is in this context that investment perspective i.e. looking at expenses on human resource management function as an investment yielding a return- short term or long term or both – takes centre stage.

HR Manager many a times is confronted with a situation of selecting one alternative from among a number of alternative courses of action. He will have to do a cost - benefit analysis for each of the alternatives. The costs and benefits may be occurring at different points of time in future. This takes us to the field of capital budgeting analysis. Further the outcomes of many of the decisions may be uncertain. This takes us further to the field of capital budgeting under risk and uncertainty. Pandey I M describes a theoretical framework for capital budgeting decision under risk and uncertainty.

### **3. Review of literature**

As described already Pandey I M describes a theoretical framework for capital budgeting decisions under risk and uncertainty using decision tree analysis. Decision tree analysis is a technique in the field of Operations Research, whose genesis dates back to the work of Von Neuman.

4. In this paper an attempt is made to show how decision tree analysis can be applied to the situation in Strategic Human Resources Management, Specific objectives of this paper are as follows.

To apply the technique of capital budgeting under risk and uncertainty using decision tree to a situation in strategic human resources management using a real life case study. In what follows we describe the framework described by Pandey I M.

### **5. Capital budgeting under risk and uncertainty using decision tree approach**

Here we describe the conceptual framework of capital budgeting problem under risk and uncertainty using decision tree as described by I M Pandey.

- There are a number of alternative investment proposals available to a decision maker.
- With each investment proposal, there are a number of possible out comes, which are beyond the control of the manager (decision maker) and whose probabilities can be ascertained.
- The costs and benefits occur at different points of time.

- With each possible pairs of investment proposal and outcome, pay off (monetary value) is associated. This payoff is the net present value of the investment proposal.
- In what follows, we make an attempt to demonstrate the use of decision tree analysis in the context of a HRM decision making situation.

## 6. Minicase

A Bangalore based IT Company is facing employee attrition rate of 15% p.a. The bench mark attrition is 12% p.a. Hence the company wishes to bring down the employee turnover by 3%p.a. A HR consultant who is hired to advise the Company in this regard gives the following report.

Work force diversity is a well known reality in the realm of Human Resource Management. In such a situation different set of employees have different pressing needs and hence different motivating factors. Hence the consultant comes out with two possible alternatives.

- Allowing for flexi time. This will appeal to those employees, especially women employees with small kids and aged parents.
- Introducing employee stock option plan specially designed for retaining employees.

However in the judgment of the consultant, 30% will prefer flexi time and the rest employee stock option plan.

In the opinion of the consultant the above two alternatives and cost and benefit data are valid only for a period of 5 years. For capital budgeting analysis, the company uses a discount rate of 10%.

**Flexi time:** The first alternative the consultant suggests is allowing for flexi time. The probability of success of this plan in employee retention is estimated as 30%.

Introducing flexi time would amount to reimbursement of travel expenses for entry and exit only between 6 A.M. and 8.30. P.M. for 6 days in a week.

It is assumed that the average distance an employee travels to work place is 20 kms per day. The reimbursement is at the rate of Rs. 20 per km. This

works out to Rs 28,800 p.a. We compute the net present value at a discount rate of 10% for a life of 5 years which works out to Rs. 1.1 Lakh

**Employee Stock option plan:** The next alternative suggested by the consultant is introducing a stock option plan specifically designed for employee retention. Here the monetary benefit to an employee increases with the number of years the employee stays with that company. The probability of success of this plan has been estimated as 70%.

The plan is structured as follows. After every completed year an employee is eligible for shares of the company with a market value totaling Rs. 50,000. The vesting plan is - 20% of the shares for each completed year. For example, if an employee leaves this company after completion of two years, then he gets shares worth Rs. 20, 000 for the first completed year and shares worth Rs. 10, 000 for the second completed year totally shares worth Rs. 30, 000. For the purpose of decision tree, we have done the cash out flow computations over the life of this project i.e. 5 years. This works out to Rs. 1, 50,000. Further we compute the net present value at a discount rate of 10%. This works out to Rs.1.06 lakh.

The consultant states that even though the employees show their preference for flexi time or stock option, after availing of any of the benefits the probability of the employees leaving the company is definitely not ruled out. The relevant probability is summarized as follows.

**Table-1: Table showing relevant probabilities**

	Preference for flexi time	Preference for Stock option	Total
Continue in the company	0.26	0.62	0.88
Leave the Company	.04	.08	0.12
Total	0.3	0.7	1.00

Cost of recruitment per employee is Rs. 40,000 one month hiring time, 6 month training together cost the company Rs. 10.00 lakh per employee. The total cost of recruitment and training amounts to Rs. 10.4 lakh per employee

We come to the following data.

- Cash out flow of introducing flexi time – Rs. 1.1 lakh
- Cash out flow of introducing stock option plan— Rs. 1.06 lakh
- Cash out flow of replacing a left employee – Rs. 10.4 lakh per employee

We draw the decision tree as follows

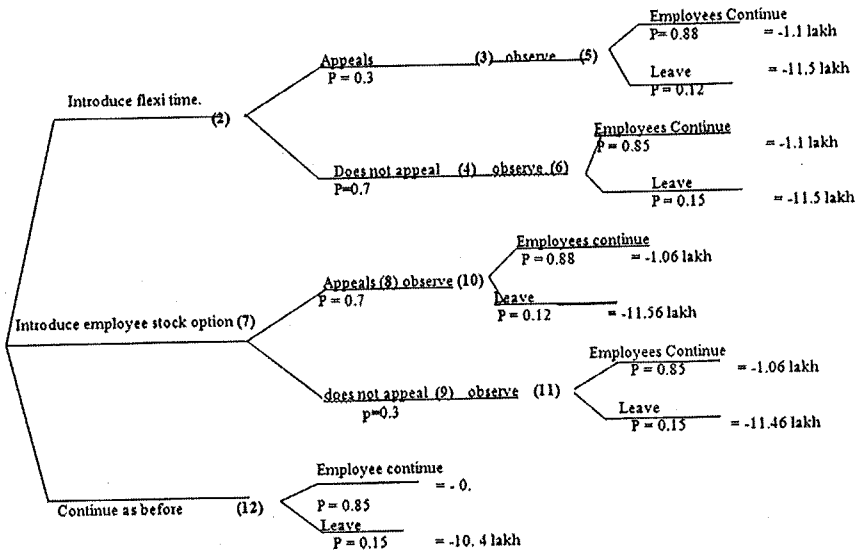


Fig 1: Decision tree

Detailed calculation have been shown in Annexure -

We have the following table

Alternative	Expected cash flow in Rs. lakh
Introduce flexi time	-2.567
Introduce employee stock/option plan	-2.422
Continue as it is	-1.56

We select the alternative of continuing as it is i.e. not introducing flexi time or giving the stock option.

## 8. Conclusion and suggestions

In this paper an attempt has been made to show the applicability of decision tree approach based on cost benefit data to evaluate alternatives in the context of Strategic Human Resource Management.

Application of decision tree can be attempted in other HR situations.

In fact it is applicable, whenever a firm has option to choose from possible alternative solutions.

It can be used to select a suitable measure to increase employee morale, increase employee satisfaction and the like.

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# Annexure – 1

At node - 5

Event	Out Comes	Probabilities	Cash Flows	EMV
Observe	Employees Continue	.88	-1.1	-0.968
	Leave	.12	-11.5	-1.380
				-2.348

At node - 6

Event	Out Comes	Probabilities	Cash Flows	EMV
Observe	Employees Continue	.85	-1.1	-0.935
	Leave	.15	-11.5	-1.725
				-2.66

At node - 2

Event	Out Comes	Probabilities	Cash Flows	EMV
Observe	Appeals	0.3	-2.35	0.705
	Does not appeal	0.7	-2.66	1.862
				-2.567

At node - 8

Event	Out Comes	Probabilities	Cash Flows	EMV
Observe	Continue with the Company	.88	-1.06	-0.933
	Leave	.12	-11.56	-1.390
				-2.32

At node - 9

Event	Out Comes	Probabilities	Cash Flows	EMV
Observe	Continue with the Company	0.85	-1.06	-0.901
	Leave	0.15	-11.56	-1.74
				-2.64

At node - 7

Event	Out Comes	Probabilities	Cash Flows	EMV
Observe	Appeals	0.7	-2.32	-1.63
	Does not appeal	0.3	-2.64	-0.79
				-2.422

At node - 12

Event	Out Comes	Probabilities	Cash Flows	EMV
Continue	Employees Continue	0.85	0	0
	Leave	0.15	-10.4	-1.56
	Total			-1.56