Chapter-III
Human Resource Accounting Models - An Overview
CHAPTER-III
HUMAN RESOURCE ACCOUNTING
MODELS – AN OVERVIEW

In the preceding chapter an attempt has been made to discuss the framework of human resource accounting wherein the concept, definitions, scope, objectives and significance of human resource accounting have been thoroughly examined. Moreover, we have also highlighted the areas of human resource accounting.

With the ever expanding dimensions and growing complexities of business activities, increasing government monitoring in business affairs, pressing trade union demand for greater disclosure on human performance in business and emanation of scientific management with in the organisation there is a need to develop a system of accounting that account for men who are indispensable resources to an organisation. For the last few decades, the accounting scenario across the world is much concerned with the valuation of human resources and reporting the same in the annual accounting statement. The academicians, practitioners and institutes in the accounting world are deeply engrossed in the issue and have shown an increasing interest in the application of the models developed. It is in this background that the present chapter deals with the approaches developed for the
measurement of the human resources. It is worthwhile to mention that a number of studies designed to compute the cost and value of human resources have been conducted in United States. Many persons has developed different models for valuation of human resource. It has been observed that most of the significant research have been done in past two or three decades. Attempts were made by many thinkers in this field years ago also but the real work regarding consideration of human resource as an asset had started after the evolution of behavioural approach, that is, after 1960. Different types of models have been suggested by many thinkers. The studies reviewed here are those conducted by Hermanson (1964) Shultz (1960), William C. Pyle (1967), Brummet, et al. (1969), Rensis Lakert (1967), Hekimian and Jones (1967), Lev and Schwartz (1971), Flamholtz (1971, 1972, 1973), Jaggi and Lav (1974), Gills and Robinson (1972), Morse (1973), Friedman and Lev (1974), Kenneth Sinclare (1978) etc. Myre’s and Flower’s (1974) and Chakroborty (1976) etc.²

In order to develop the clarity of concept, an endeavour is being made to discuss the monetary and non-monetary models of valuation of human resource.

All these models have been classified in the following chart:
Human Resource Accounting Models

Models of HRA

Monetary Models

Cost Based Models

Historical Cost Model (Brummet and Pyle)

Replacement Cost Model (Rensis Likert, Eric Flamholtz)

Opportunity Cost Model (Hakimions and Jones)

Standard Cost Model (David Watson)

Non-Monetary Models

Value Based Models

Likert's Model

Taylor's & Bawers Model

Lev & Schwartz Model

Flamboltz Model

Jaggi & Lai Model

Giles and Robinson's Model

Morse Model

Ogan Model

Chakravarty Model

Dasgupta Model

Watson Model

Dave's Model

Maheswari's Model
Monetary Models

The models which incorporate the monetary aspect are called monetary models. All these models can be classified into two major groups i.e. Cost Based Models and Value Based Models. Cost based models consists of historical cost model, replacement cost model, opportunity cost model, standard cost model and value based model includes Lev and Schwartz Model, Flamholtz Model, Jaggi and Lau Model, Gills and Robinson’s Model, Morse Model, Ogan Model, Chakrobarty Model, Dasgupta Model, Watson Model, Dave’s Model, Maheshwari’s Model.

Cost Based Models

- Human resource cost accounting is the measurement and reporting of the costs incurred to acquire and develop people as organisational resources. It deals with accounting for investments made by an organisation in acquisition and developing human resources as well as the replacement cost of people. Human Resource Cost Accounting (HRCA) includes:
  - Accounting for the costs of personnel activities and functions suit as recruitment, selection, placement and training.
  - Accounting for costs of developing people as human assets.
The monetary approaches to the measurement of human resource cost is based on either historical cost or replacement cost or opportunity cost. ³

**Historical Cost Model**

The original cost model was proposed by Brummet and others in 1968 to measure a firm’s investment in human resources.⁴ They were of the opinion that human resource costs are current sacrifices for obtaining future benefits and so automatically they form a part of company’s assets. In accordance with general accounting practice only those outlays which have an expected value beyond the current accounting period are capitalised; those outlays the value of which is not expected to last beyond this accounting period are treated as expense items. The company’s expenditure on acquisition, selection, training, workers education, welfare and other development cost in a particular year would have impact on the efficiency of the human resources and therefore the resultant benefit would last beyond that particular year. The proponents therefore, suggested to capitalise firm’s expenditure on recruitment, selection, orientation, training and development of people and treat them as assets for the purposes of human resource accounting. Such capitalised amounts after writing off a certain portion towards turn over loss and amortisation for
that year are to be shown on the assets side of the balance sheet, as distinguished from other physical assets.

According to this method human resources accounting is not directly concerned in determining the net worth or rupees value of an individual employee of a firm rather to develop methods for measuring a firm's rather to develop methods for measuring a firm's investment on its human organisation, and to find out the rate at which those investments are performing.

The main strength of this model is that it meets the test of traditional principles of accounting i.e., it is only an extension of the concept of proper "matching of cost and revenue". So one strong point for this method is the fact the effects of human resources accounting can be shown on Balance Sheet and profit and loss account since the information in these statements is also stated on historical basis.

The value of human resources, according to this approach is

\[ HRV = AC-L+R \]

Where

HRV = Human Resources Value

L = Loss on account of premature liquidation of human resources.

R = Revision consequent on longer than anticipated life of human.
This method suffers from the following difficulties. It is very difficult to estimate the working period of human resources as is done in the case of plant and machinery. The value of an asset decreases with amortisation but in the case of human resources the situation is just reverse with the acquisition and training in the course of time the utility of employees increases rather than decreasing. It is very difficult to fix a rate of amortization. There are many methods of depreciation, it is difficult to find out the best method for this asset. To the case of human assets the common practices is to charge constant amount of depreciation every year. It is difficult to determine the number of years over which the effect of investment on employees will be realized. The extent to which the employee will utilize the knowledge acquired is also subjectively estimated. The main purpose of HRA is to assist management in decision but in this method historical costs can be of very little use to the management due to changing values of human beings.

Replacement Cost Model

This method was developed by Rensis Likert and Eric G. Flamholtz in 1973. This Model suggests that human resources are valued at their present cost. Under this method, human resources of an organisation are to be valued on the basis of the estimated
cost of replacing the existing human resources with others of equivalent talents and experience.

The major advantage of this approach is that it incorporates the current values of the firm's human resource which could make possible realistic presentation of financial statements. In the process, it takes into account the fluctuations of the job markets and general rise in price level. It will not be possible to ascertain correct replacement cost of existing human resources as there can be no competitive replacement for them. Hence this approach defies the objective way of determining the value of human resource.

This approach has the advantage of adjusting the human value of price trends in the economy and thereby provides more realistic value in inflationary times. This approach is present oriented. However, this method suffers from some difficulties also. It may not always be possible to obtain such a measure for a particular employee. It is not always possible to find out the exact replacement of an employee. This method does not reflect the knowledge, competence and loyalties concerning an organisation that an individual can build over time. It is difficult to find out the cost of replacing human resources as different persons may arrive at different estimates.
Opportunity Cost Model

This model of HRA has been suggested by Hekimian and Jones to overcome the limitations of replacement cost model. It values human resources on the basis of the economic concept of opportunity cost. The opportunity cost is linked with scarcity. A human resource asset has a value only when it is scarce i.e. its employment in one division is possible and not in another division. The investment centre managers will bid for the scarce employees they need to recruit. These “Scarce” employees come from within the firm and include only those who are the subject of a recruitment request made by an investment centre manager. In other words, employees not considered ‘Scarce’ are not included in the human asset base of the organisation.

The investment centre with the highest bid, would win the human resource and include the price in its investment base. The competitive bidding process provides an optimal allocation of personnel with in the firm and a quantitative base for planning and developing the human assets of the firm. The amount of bid is added to the capital employed of its successful bidder for determining return on investment. This approach is based on the simple principle of demand and supply.

The maximum bid price may go to the extent of the capitalised value of the extra profits likely to be generated by the
Human Resource Accounting Models-An Overview

ability and competence of the executives. For instance, let us assume that a firm has capital base of Rs. 15,00,000 and it earned profits of Rs. 2,10,000. The required rate of return is 15%. If the services of a particular manager are required, it is expected that profit will rise by Rs. 45,000 over and above the target profits.

If we capitalise Rs. 45,000 at 15% rate of return, it works to Rs. $\frac{45000 \times 100}{15}$ i.e. Rs. 3,00,000. The firm may bid upto Rs. 3,00,000 for the manager. The new capital base shall be Rs. 18,00,000 (15,00,000+3,00,000). 15% of Rs. 18,00,000 is Rs. 2,70,000. Thus, the extra profit earned shall be Rs. 60,000 (2,70,000-2,10,000) and the maximum bid may go upto the capitalised value of Rs. 60,000, the excess profit to be generated by the manager; i.e. $\frac{60,000 \times 100}{15}$ = Rs. 4,00,000.

The opportunity cost suffers from a number of drawbacks. Apart from being subjective, it excludes from its preview those employees who are not bid by investment or profit centres. The inclusion of 'Scarce' employees only may be taken as discriminatory by other employees. This may lead to lowering morale of employees especially of specialists who can not be used in other divisions. Further less profitable divisions may be penalised by their inability to outbid for the recruitment of better employees. The economic and current value approaches using the
Human Resource Accounting Models-An Overview

present value of expected future benefits have strong theoretical approach. From practical point of view, it is very difficult to quantity future economic benefits. Despite certain objections, this approach has its own merits and utility in a decentralized set-up.  

Standard Cost Model

This model has been suggested by David Watson. According to him standard costs of recruiting, hiring, training, and developing per grade of employees are determined year after year. The standard cost so arrived at for all human beings employed in the organisation is the value of human resources for accounting purposes.

The approach is easy to explain and can work as a suitable basis for control purposes through the technique of analysis. However, determination of the standard cost for each grade of employee is a ticklish process.

Value Based Models

The value of HR of an organisation can be assessed in two different ways:

i) By discounting the future salaries and other capital costs (such as costs incurred on hiring, recruiting, training and developing employees) by a certain rate of discount) and
ii) By discounting the future earnings of the organisation as at a certain date by a suitable rate and allocating a part of the present value of earnings to HR.

In consonance with the above to premises a number of valuation models have been suggested in the literature.

These are discussed below:

**The Lev and Schwartz Model Present value of future earnings**

This model was proposed by Branch Lev and Aba Schwartz in 1971 for value the human resources in a firm. They suggested that “the valuation of human capital embodies in a person of age $x$ is the present value of his remaining earnings from employment.” They have given the following formula for calculating the value of an individual.

$$V_x = \sum_{t=x}^{t} \frac{I(t)}{(1+r)^{t-x}}$$

where

- $V_x$ = The value of an individual $x$ years old
- $I(t)$ = The individuals annual earnings upto retirement
- $r$ = a discount rate specific to a person and
- $t$ = retirement age.

The original model of HRA given by Lev and Schwartz ignored the possibility of death prior to retirement age which
Human Resource Accounting Models-An Overview

promotion the authors to refine the model by incorporating $P_x(t)$ the probability of a person dying at age $t$ in the following.

$$\sum (L'x) = \sum_{i=0}^{y} \frac{P_x(t + 1) \sum_{j=0}^{x} \frac{I^i}{(1 - r)^{j+1}}}{i}$$

$I^i$ = Future annual earning

$P_x(t)$ = the probability of a person dying at age $t$, and

$\Sigma (V^i_x)$ = the expected value of an individual's human capital.

The model requires the division of the whole labour force of a firm into certain homogeneous groups such as unskilled, skilled, semi-skilled, technical staff, managerial staff etc. and in accordance with different classes and age groups. Average earnings stream for different classes and age groups are prepared for each group separately and the present value of human capital is computed by using the cost of capital as the discount rate. The aggregate present value of different groups represents the capitalized future earnings of the firm as a whole.

The model given by Lev and Schwartz can be considered as an improvement over the cost models as it seeks to value the human resources of an organisation on the basis of the economic value of employees of total organisation. This model suffers from certain deficiencies as it ignores: (1) The individual's value to an organisation depends upon the role in which an individual is placed in addition to his qualities traits and skills; (2) employees
change their roles during their career due to promotion, transfer etc. and (3) an individual may leave the organisation for reasons other than death and retirement.

**Flamholtz Stochastic Rewards Valuation Model**

The model propounded by Eric Flamholtz (1971),¹⁰ identifies the major variable which determines the values of an individual to the organisation. The model advocates that a person generates value for an organisation as he occupies and plays different roles and renders services to the organisation. The movement of people from one organisation role to another is a stochastic process. As people move and occupy different organisational roles they render service (rewards) to the organisation. Based upon the above concept, a person's expected reliable value to the organisation can be measured as the discounted mathematical expectation of the monetary worth of the future rewards (services) a person is expected to render to the organisation in future roles he is expected to occupy, taking to consideration the probability of his remaining in the organisation.

The model suggests a five step approach to assess the value of an individual to the organisation:

1) Forecasting the period a person will remain in the organisation i.e. his expected service life.
2) Identification of service states, i.e. the position he might occupy and the time at which he will quit the organisation.

3) Estimating the value derived by the organisation when a person occupied a particular position (service state) for specified time period.

4) Estimating the probability of occupying each possible mutually exclusive service state at specified future times.

5) Discounting (at a specified predetermined rate) the expected service rewards to their present value.

Flamholtz clarifies that an individual's expected realisable value is determined by two factors: (i) the individual's conditional value, and (ii) the probability that the individual shall maintain his expected service life. The profit of these two variables is the present worth of potential services that are expected to be rendered to the organisation. This value in turn consists of three factors namely productivity, transferability and promotability. Productivity means the present position. Transferability refers to the set of services an individual is expected to provide if he is transferred to a same position level in a different department of the organisation. Promotability is a set of services an individual is expected to provide after his promotion to higher positions.

Further an individual's conditional value is determined by his skill (currently developed potential to provide services to the
organisation) and activation level (the extent to which that person is affected by motivation). In addition to the personal factors the organisational factors also influence the conditional value of an individual. They are: (i) the role occupied/performed by the individual within the organisation, and (ii) organisational rewards.

Theoretically the model suggested by Flamholtz is the most scientific model as it provides a future-oriented economic value of human assets. However, its practical use is very difficult as the collection of reliable data regarding the value of a service state, a person’s expected tenure and the probabilities of occupying various service states at specific times is not an easy job.

Jaggi and Lau Human Resource Valuation

The model suggested by Jaggi and Lau (1974) is based on valuation of groups rather than individuals. A group implies homogeneous employees who may or may not belong to the same department or division. It might be difficult to predict an individual’s expected service tenure in the organisation or at a particular level or position, but on a group basis it is easier to ascertain the percentage of people in a particular group likely either to leave the firm during each of the forthcoming period or to be promoted to higher levels. In order to consider the role movements of employees within the organisation, a Markov Chain representation can be used. The model requires the determination
of Rank Transitional Matrix and the expected quantities of services for each rank of service. The matrix can be prepared from the historical personal records of the employees available in the organisation. For the purpose of measurement of quantities of services, a certain service or performance criteria is used.

The value of the services an organisation's current employees render in a future period is computed by multiplying the estimated number of current employees that will be in each service state in that period, by the value of the services an employee in each state (i.e. rank) renders to the organisation. The equation for the computation of value of human resources of an organisation using Jaggi and Lau Model is given below:

$$TV=(N)r^n(T)^n(V)$$

Where

TV = Column indicating the current value of all current employees in each rank.

(N) = Column vector indicating the number of employees currently in each rank,

n = time period,

r = discount rate,

(T) = rank transitional matrix indicating the probability that an employee will be in each rank within the
organisation or terminated in the next period given his current rank, and

\[(V) = \text{Column vector indicating the economic value of an employee of rank I during each period.}\]

The model given by Jaggi and Lau tries to simplify the calculations of the value of human resources by taking groups of employees as base of valuation. However, this method is also difficult to apply in practice because of difficulty in obtaining reliable data.

**Giles and Robinson's Human Asset Multiplier Model**

In 1972, The Institute of Cost and Management Accountants (ICMA) and The Institute of Personnel Management (IPM) sponsored Giles and Robinson\(^{12}\) to produce a report on Human Asset Accounting. They suggested a human asset measurement method known as Human Asset Multiplier. According to this method the valuation of human resources should be made in the same way as other business assets on a going concern basis. The calculation of human asset value, under this method, is based on the notion that an individual's remuneration, or the remuneration of a group of persons in the same grade, may be multiplied by a factor determined on the basis of his contribution to the success of the business. The total value of human assets employed in the business can be calculated by simply adding together all the
individual values so calculated. For instance, let us assume that a firm has four types of grades, i.e. A, B, C and D and the total remuneration of these grades is Rs. 5 lacs, Rs. 7 lacs, Rs. 10 lacs and Rs. 30 lacs respectively. Further, if we assume that the relevant factors and 4, 3, 2 and 1. The value of human asset shall be Rs. 20 lacs for grade A, Rs. 21 lacs for grade B, Rs. 20 lacs for grade C and Rs. 30 lacs for grade D. The total value of the human asset shall be Rs. 91 lacs.

**Morse’s Net Benefit Model**

This approach has been suggested by Morse (1973). According to this approach, the value of human resources is equivalent to the present value of net benefit derived by the organisation from the service of its employees. The method involves the following steps.

1. The gross value of services to be rendered in future by the employees in their individual as well as their collective capacity is determined.

2. The value of future payments (both direct and indirect) to the employees determined.

3. The excess the value of future human resources (as per 1 above) over the value of future payments (as per 2 above) is ascertained. This, as a matter of fact, represents the net benefit to the organisation on account of human resources.
4. The present value of the net benefit is determined by applying a pre-determined discount rate (generally the cost of capital). This amount represents the value of human resources to the organisation.

**Ogan's Discounted Certainty Equivalent Net Benefit Model**

This approach has been suggested by Pekin Ogan (1976). This model is an extension of “net benefit approach” as suggested by Morse. According to this approach, the certainty with which the net benefits in future will accrue should also be taken into account while determining the value of human resources. The approach requires determination of the following;

1. Net benefit from each employee as explained under ‘net benefit approach’ above.
2. Certainty factor at which the benefits will be available.
3. The net benefits from all employees multiplied by their certainty factor will give certainty-equivalent net benefits. This will be the value of human resources of the organisation.

**Chakraborty Aggregate Payment Approach**

This approach has been suggested by S.K. Chakraborty (1976). Who is the first Indian to suggest a model for valuation of human resources of an organisation. According to his model,
Human Resource Accounting Models-An Overview

the human resources are to be valued as a group and not an individual basis i.e.;

1. All the employees of an organisation are divided in two groups, managerial and non-managerial.

2. The average tenure of the employment of the employees in the group is estimated on the basis of past experience.

3. The average salary of the group is determined on the basis of the salary wage structure prevalent in the organisation.

4. The value of human resources is now determined by multiplying the average salary of the group with the average tenure of the employees in the group.

5. The value determined under ‘4’ above, is discounted at the expected average after tax return on capital employed over the average tenure period to ascertain the present value of the estimated future payment. Chakraborty suggested that the adoption of such a long term rate will avoid fluctuations in the value of “human assets” from year to year simply due to changing annual rates of return.

Chakraborty has also suggested that the recruitment, hiring, selection, development and training cost of each employee should be recorded separately. This should be treated as deferred revenue expenditure and may be written off over the expected average stay of the employee in the organisation. The deferred portion, not
written off, should be shown in the Balance Sheet of the organisation. If there is premature exit of an employee on account of death, retirement, etc., the balance of the deferred revenue expenditure attributable to that person should be written off against the income of the year of the exit itself.

As regards disclosure of accounting information relating to human resources, Professor Chakraborty has suggested that 'human assets' should be shown under the heading "Investment" in the Balance Sheet of an organisation. He has not favoured its inclusion under the heading fixed assets since it would cause problem of depreciation, capital gains and losses, in the event of their exit. Similarly, he has not favoured their inclusion in current assets on the ground that this will not be in conformity with the general meaning of the term.

**Dasgupta’s Total Cost Concept Model**

This approach has been suggested by N. Dasgupta (1978). According to him the various approaches in the previous pages into account only those persons who are employed and ignore those who are unemployed. In case the value of human resources of the nation is to be determined, it should be done in a manner that it brings in its purview both employed and unemployed persons. The system should be such that it fits in preparation of a
balance sheet showing the human resources not only of a firm but also of the whole nation.

Dasgupta suggested that the total cost incurred by the individual, the state and the organisation in bringing the individual up to that the position in the organisation (in case of a nation making him fit for appropriate employment) should be taken as the value of a person on the day he starts serving the organisation or becomes fit for appropriate employment. It will include his education, training expenses which he and the state have incurred. The value should be further adjusted by the amount of intelligence (higher or lower which he has). The amount spent by the organisation on recruitment, training, familiarising and developing human beings employed in the organisation should be considered separately. However, it should also be treated as a cost increasing the value of human beings. In case the number is large, the valuation can be done group-wise.

The value determined on the aforesaid manner should be adjusted at the end of each year by the organisation on the basis of his age, seniority, status, performance, experience, leadership, managerial capabilities, etc. The measurement can be done with the help of psychologists and other concerned experts. The revised value would be the value of the employee at the end of the year.
Dasgupta's model seems to be sound theoretically. However, its practical application may be difficult since it will involve a number of abstract factors which may not be capable of being expressed in monetary terms precisely and objectively.

The usefulness of HRA model in the process of HRD would depend upon how best it meets certain basic requirements. These requirements are:

I. The model should identify the factors which determine the value of human resources.

II. The model should identify the factors which can improve the value of human resources.

III. The model should be capable of measuring the value of human resources operationally. A model can be made operational only if the data which it requires can be made available. Very often, a model can be theoretically sound, but, if the required data are not available its usefulness shall be greatly reduced.

IV. The information generated by the model should help users to make decisions relating to the process of human resource development.

**Watson's Return on Effort Employed Method**

David Watson\(^7\) developed this method which involves the measurement of effort employed on various functions i.e. buying,
manufacturing and selling. Factors which distinguish the quantity and quality of effort expended are used to rate the contribution made by individuals. Such factors are:

i. Levels or Grade of work done.

ii. Effectiveness with which the individuals performs his job.

iii. Experience which increases, upto a point, the efficiency of job performance.

These factors are then multiplied together in determining a measurement of effort employed for each individual. Individual scores are aggregated to obtain the figure of total effort employed in an Organisation.

The method helps in more efficient allocation of Human Resources. It makes possible to question the existing allocation of resources between the different functions like buying, manufacturing and selling on the basis of ratio of profits to efforts.

**Dave's Modified Present Value Model**

The model developed by Shiv Kumar Dave\(^1\) in 1987 incorporates in its indicators to reflect the effect of five factors which often affect the contribution of employees to the organisation and thereby, the calculated value of human resources. The model incorporates suitable indicators to take care of the
positive and negative factors affecting the contribution of an employee to his organisation. The indicators are given below:

a) Experience Indicator
b) Efficiency Indicator
c) Labour Turnover Indicator
d) Labour Unrest Indicator
e) Output-per-Employee Indicator

These indicators can be fitted on to any of the existing models and that is why the model is known as modified present value model.

**Maheshwari, Rana and Krishnamoorthy Differential Matrix Utility Model**

Maheshwari, Rana and Krishnamoorthy in their research paper entitled "Measuring the Marginal Worth of Human Resources: A Differential Matrix Utility Model", have proposed the new model of valuation of HR. The basic data for this model will come from the job title or job responsibilities of that position. Identify the basic critical factors relevant to the firm's profitability, success, and market share etc. related to the individual job title or position.

Develop a differential matrix of the individual for those factors. The differential matrix is based on 1:1 ratio for an equally effective candidate for replacement. A better candidate,
therefore, gets a merit point more than one and a less effective candidate gets a merit point less than one.

Merit point given is for the new candidate with the existing candidate. Merit Point for the existing candidate will be one. If a firm can get a better candidate for a CSF then the merit point for the new candidate will be greater than 1 otherwise the merit point value will be less than one.

Probability refers to the chance of finding a replacement. Product of Merit points and weight gives the weighted merit points of the new person. Weights are given because a person may be excellent in one CSF but that CSF may not be rated that highly by the hiring institution. The total of product in nutshell measures whether the new person is more valuable than the existing one.

Assign weights to those factors such that the sum of weights is equal to one. Allocate the proportionate salary to these weighted factors. Assume the existing salary of a key employee is $100,000.

<table>
<thead>
<tr>
<th>CSFS</th>
<th>Merit Point</th>
<th>Weight</th>
<th>Weighted Merit</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSF1</td>
<td>0.9</td>
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<td>1.2</td>
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</tr>
<tr>
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</tr>
<tr>
<td></td>
<td>5.6</td>
<td></td>
<td>1.05</td>
</tr>
</tbody>
</table>

Salary

105,000
$105,000 gives the relative monetary worth of the new candidate to the organization. However, the market value of the candidate may be higher than $105,000. Assume the candidate can only be attracted to the organisation when the offer is for at least $125,000. Knowing this, the organisation should reevaluate the worth of existing candidate.

Conditional worth of the existing candidate (perceived market value) is therefore $125000/1.05=$119,048 due to the existing market rates. (There are additional cost of hiring and training the new person. Those costs are not relevant to the person leaving the organisation. The person leaving the organisation will also incur some cost in terms of money, time, change in social setup, and effort.

How to optimize the likelihood that the existing candidate to stay. Here we assume that the existing person has an expectation of $130,000 if he moves to another organisation, other things remaining same. Therefore the expectation gap is the difference of the salary expected and the potential salary at the existing organisation.

<table>
<thead>
<tr>
<th>Salary offered</th>
<th>Expectation gap</th>
<th>Probability of Stay</th>
</tr>
</thead>
<tbody>
<tr>
<td>100,000</td>
<td>30,000</td>
<td>0.20</td>
</tr>
<tr>
<td>105,000</td>
<td>25,000</td>
<td>0.50</td>
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</tr>
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<td>120,000</td>
<td>10,000</td>
<td>0.95</td>
</tr>
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</table>
The decision-maker will not offer more than $119,048 to the existing person. We look at the incremental likelihood as the salary is increased and the expectation gap is reduced. Make an offer when incremental probability per unit of salary increase is maximized. (Possible use of game theory for the theoretical background). Suppose, after thoughtful consideration and negotiations the final offer by the company is $110,000. The company in effect is saving $10,000 per year plus the cost of hiring and training the new person. It is expected that the savings of $10,000 will continue for the next 5 years. The present value of these inflows may then be computed. (This incremental present value may be reflected in the balance sheet as an asset? Why or why not? The existing salary is reflected as an expense in the profit and loss account). In terms of sale it may need to generate $100,000 in revenue. The market value for the person will change every year and therefore the incremental value of the key personnel may be computed every year. The skills of the person and job requirements may also change every year which again necessitates the computation of incremental worth of the human capital. Normally the value of an asset decreases over a period of time due to depreciation. However, the human capital may actually be worth more with an additional year of experience. The question is how to reflect that asset in the coming years and
what happens when the person leaves. If this information is

gathered for the key personnel in the organization the Market gap

is the asset. The sum total for the key personnel is the incremental

value of the human capital. Weighted merit compared to the new

person.¹⁹

<table>
<thead>
<tr>
<th>Key Personnel</th>
<th>Perceived Mkt. Salary offered</th>
<th>Market Gap Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>119,000</td>
<td>110,000</td>
</tr>
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</table>

**Non-Monetary Models**

The models which are dominated by behavioural variables
can be classified as non-monetary models. There are only two non-
monetary models available so far, developed by Likert’s casual
intervening and End-result variable model and Taylor and Bowers
models.

**Likert’s Causal Intervening and End-result Variables Model**

Rensis Likert²⁰ and David G. Bowers of the Institutes for
social Research, University of Michigan, USA developed a model
to measure the human resource value as a group to an organisation.

The model assumes that the organisational productively can
be explained in terms of the human organisation. The model has
classified certain human variables into three categories:
i) Causal Variables

These are independent variables which can be directly or purposely altered or changed by the organisation and its management which, in turn, determine the course of developments within an organisation.

ii) Intervening Variables

These variables reflect the internal state, health and performance capabilities of the organisation e.g. the loyalties, attitudes, motivation, performance, goals and perceptions of all members and their collective capacity for effective action, interaction, communications and decision making.

iii) End Result Variables

These are dependent variables which reflect the results achieved by that organisation such as its productivity, costs, scrap loss, growth, share of market and earnings. Thus it includes financial and performance data reflecting the results achieved by the firm. Hence some of the end result variables are monetary in nature.

The model shows that the changes in leadership styles, technical proficiency level, managerial behavior, organisational structure (called the intervening variables) which produce changes in productivity, innovation, cost, revenue, quality, output, manpower development (called the end-result variables). If a
meaningful relationship among the three variables is established, the trend in earnings can be predicated. Forecast of predicated earnings can be discounted to determine the present value of the firm and its human resources.

Managerial leadership determines organisational climate which in turn influence the subordinate's satisfactions and subsequently the total productive efficiency. Time lag of two years or more, often exist between a change in causal variables and the resultant changes in the end-result variables.

Likert observes that a firm in which the causal variables display the characteristics of participative management style, will generate more effective intervening variables and consequently more desirable end-result variables. He argues that the philosophy and practice of conventional accounting concentrate on a few end-result variables which are consistent with the exploitative type of management style. He opines that by over emphasising short run profits and cost savings the present accounting system penalizes managers who are making the greatest long run contribution to the organisation.

**Merits**

a) The model unfolds the magnitude of human resource contribution to accomplish the objectives of the organisation
and can be used as a means to formulate policy to build long term human resource capabilities.

b) It indicates the probable effects of management style on the results of the organisation both in the short run and in the long run.

Demerits

a) The model assumes linear relationship between causal, intervening and end-result variables after allowing for time lag effects which reduces the degree of reliability.

b) It is an expensive and time consuming model.

c) The questionnaire duly completed by members of the organisation forms the basis of all subsequent calculations. Hence, different people may not arrive at the same value due to personal bias of the respondents.

d) The completed questionnaire requires interpretation which again will be subjective.

Taylor and Bowser’s Model

The measurement model, suggested by Taylor and Bowers which is, in part. based on an earlier model suggested by Likert and Bowers provides an approach to the determination of group-value in non-monetary terms. It is designed to measure the ‘organisational climate’ or the ‘state of human organisation’ as
termed by Likert. Actually, the method suggested in the model is the survey of an organisation through questionnaire.

'Organisational climate' is a concept, which refers to the perception of the members of an organisation about the social-psychological reality of the organisation. For the determination of group value, a set of variables are selected for measurement, viz., leadership processes, the character of motivational forces, communication processes, interaction-influence processes, decision-making processes, goal-setting processes, and control-processes. The questionnaire used for the survey is designed to evoke perceptual responses, intended to stimulate the respondents to consider facts and express their opinions as to how they perceive the facts, irrespective of whether they like them or not. Using the five point Likert Scale for response, the model requires the respondent to indicate the degree to which he agrees or disagrees with a series of statements. The questionnaire items can be combined into indices for each of the variables being measured. Taylor and Bowers have constructed composite indices for various dimensions of organisational climate. These indices are taken to reflect a measure of the value of human organisation.

Dwelling on the relationship among several variables, Taylor and Bowers identified the following consistent clusters of variables: (i) technological readiness; (ii) human resource
Human Resource Accounting Models-An Overview

primacy; (iii) communication flow; (iv) motivational conditions, and (v) decision-making practices. Composite indices, with respect to each cluster of variables, were measured and tested for the internal consistency, reliability and discriminant validity. All the composite indices, except 'Technological readiness', were found to have acceptable internal consistency, reliability and discriminant validity. Thus, four of the indices could be used in practice as a measure of organisational climate and, hence, of the value of human organisation.

The cost models of HRA fail to recognise the factors which determine the economic value of human resources. Also no serious effort is made in these models to identify factors which can enhance the value of human resources. The Historical Cost model measures the value of human resources on the basis of capital cost incurred to acquire and develop these resources. Since this model fails to recognise the economic value of human resources of an organisation, the data generated through this model is of little significance for making decisions regarding matters relating to human resources development. The replacement cost model seeks to incorporate the current values of company’s human resources in its financial statements. However, this model cannot be used in practice as it is really difficult to find identical replacements of existing employees. The opportunity cost model is based on the
economist's concept of opportunity cost. This method can be used for computing the value of those employees only who can be employed on alternative jobs. This method fails to measure the value of those employees who are specialists in certain fields.

From the above analysis it can be said that cost models of human resource accounting are of little use in the process of human resource development. Among the present value models, the Lev and Schwartz Model and the Hermanson's Model do not make any serious attempt to identify factors determining the value of human resources. At the same time these models also fail to explain the factors which can improve the value of human resources. Both these models suggest to use the future wages and salaries of employees of an organisation as a surrogate of the value of its human resources. Both these models assume that wages and salaries paid to the employees fairly represent the contribution made by them to their organisation. However, in actual practice the things might be quiet different; as there are evidences that employees sometimes are not fairly compensated. Therefore, the information generated by the above two models can not help the management in making HRD-related decision to a significant extent.

The Flamholtz's Stochastic Valuation Model and Jaggi and Lau's model explain the factors determining the value of human resource to a considerable extent. These models also explain the
factors which can improve the value of human resources. The Flamholtz’s model focuses on individual employees for the measurement of human resources whereas Jaggi & Lau suggest the use of homogenous groups of employees as the basis for the same. However, there are a number of computational problems which make the practical use of these models a difficult preposition. An organisation desirous of using these models for human resource valuation must create facilities for estimating the reliable value of variables determining the value of human resources. If this could be done the information so generated, could be of considerable importance for making HRA related decisions.

A discussion of the HRA models in the foregoing pages reveals that there is not even a single model which fulfils all the requirements of a model which could help in the process of HRA. Certain models fail to recognise the factors determining the value of human resources whereas other have computational problems. Therefore, there is a need for great deal of research with regard to evolving a system of accounting for human resources which could be of considerable help in the process of human resource development.

In the next chapter, we will focus on the practices adopted by Indian Public Sector companies regarding the human resource accounting. It will also give instances where this important aspect of accounting has been applied and once it is applied what have been its consequences.
References


