CHAPTER 3
HUMAN RESOURCE VALUATION MODELS

<table>
<thead>
<tr>
<th>SR. NO.</th>
<th>TITLE</th>
<th>PAGE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>INTRODUCTION</td>
<td>63</td>
</tr>
<tr>
<td>3.2</td>
<td>MODELS OF HUMAN RESOURCE VALUATION</td>
<td>64</td>
</tr>
<tr>
<td>3.2.1</td>
<td>MONETARY MODELS</td>
<td>64</td>
</tr>
<tr>
<td>3.2.1.1</td>
<td>COST BASED MODELS</td>
<td>64</td>
</tr>
<tr>
<td>3.2.1.2</td>
<td>VALUE BASED MODELS</td>
<td>66</td>
</tr>
<tr>
<td>3.2.2</td>
<td>NON-MONETARY MODELS</td>
<td>74</td>
</tr>
<tr>
<td>3.3</td>
<td>CONCLUSION</td>
<td>76</td>
</tr>
<tr>
<td>3.4</td>
<td>REFERENCES</td>
<td>77</td>
</tr>
</tbody>
</table>
CHAPTER 3
HUMAN RESOURCE VALUATION MODELS

3.1 Introduction:
The people are the most important assets of an organization but the value of this asset is yet to appear in financial statements. Valuation of Human Resource in monetary terms, not only facilitates its presentation in balance sheet but also helps in strategic planning and the achievement of these plans (Gupta, N. & Singh, A. K.).

Human capital may find its place on the assets side on a balance sheet only if it is expressed in terms of value. A proper method for measuring Human Resource Value is needed to disclose human capital among balance sheet items (Milost, F., 2014).

Sir William Petty around 1961 made the first attempt to estimate the money value of human beings. According to Petty, labour is the "father of wealth" and thus considered labour as one of the important factors in estimation of national wealth. This, one of the first attempts made towards the valuation of human asset, estimated the value of the stock of human capital by capitalizing the wage bill in perpetuity at the market interest rate; the wage bill being determined by deducting property income from national income (Kiker, B. F., 1966).

Human Resource Accounting is important for managers and other professionals. Accountants need a system which is capable of providing accurate and reliable information about human resource of the organization (Jaggi, B., & Lau, H. S., 1974). It is evident from the past literature that there is enormous/significant work done in the past two to three decades on valuation of human resource. There were several attempts made to overcome this problem. As a result of these attempts, many research scholars have developed different models of Human Resource Valuation. Thus, researcher, in this study made an attempt to understand these different models of Human Resource Valuation which is one of the important objectives of this research work.
3.2 Models of Human Resource Valuation:

The major objective of Human Resource Accounting is to develop a valid and reliable method of valuing the human resources in an organization. Both monetary and non-monetary measures are required to make decision in different areas of acquisition, development, allocation of human resources and for monitoring and evaluating the effectiveness and efficiency of utilized human resources by management (Flamholtz, E. G., 1999).

3.2.1 Monetary Models:

A small group of economists came together to develop certain techniques to measure the worth of human capital. They came up with two ways of estimating the value of humans which were: 1) Cost of Production and 2) Capitalized Earnings procedures. In the cost of production method, an estimate was made of all the costs incurred towards “producing” a human asset, whereas in the capitalized earnings approach an estimate was made of an individual’s present value of future income stream (Spiceland, J. D., & Zaunbrecher, H. C., 1976).

3.2.1.1 Cost Based Models:

I. Acquisition Cost Model /Historical Cost model:

This method was applied in 1969 by R.G. Barry Corporation which was a footwear Company in USA, Columbus. As per this method, a calculation of cost incurred on recruiting, hiring, training and development of human resource is made. The costs so determine were capitalized as human asset and then, were amortized over the period employee would remain with the organization. This method meets the accounting principle of matching cost with revenue. This method is simple and information required to calculate Human Resource Value can be easily ascertained (Sarkar, D., 2012; Ganesha, K. S., 2015). There are some limitations however, as the economic value of an active human does not always correspond to its historical cost. It is difficult to estimate the number of year’s employee will remain with the organization resulting in difficulty of writing off the capitalized expenditure over a period of stay of employee with the
organization. Also any appreciation or depreciation can be subjective as it may not relate to the increase or decrease in the productivity of human asset. Also, the costs related to an employee in an organization may differ from one employee to another, thus making the historical cost method not comparable for values of human resources. The Historical Cost Method was highly criticized as it only takes into account the sunk costs which are irrelevant for decision making (Parijan, K. K. & Naderian, A., 2014).

II. Replacement Cost Model, Flamholtz, 1973:
Replacement cost takes into account today’s sacrifice that will have to be incurred to replace an employee currently employed. For example, when an employee leaves an organization, the organization has to incur additional cost with respect to recruiting, selecting and training the replacement. As direct and indirect costs are involved, management includes such components of opportunity cost and expenses. This method suggests dual notion of replacement cost i.e. positional and personal. Positional replacement cost talks about the sacrifice that is incurred today to replace an existing employee with a new employee with the same caliber to provide the existing services for the same position. There are three elements to the positional cost i.e. hiring, training and severance costs. Severance cost deals with the cost that organization bears when an employee leaves a particular post in the company (Andrade, P., & Sotomayor, A. M., 2011, p. 80).

Replacement cost of an employee has been found to be not only highly subjective but often impossible too. At the management level, finding an exact replacement may be not only be difficult but also impossible. The exit of a top management level employee may substantially change the value of human assets (Sarkar, D., 2012).

III. Opportunity Cost Model, Hekimian and Jones, 1967:
This method was given by Hekimian and Jones in 1967 who recommended “competing bidding price” which meant that opportunity cost of an employee or group of employees in a department was calculated on the basis of the bids/offers offered by other
departments for them. This meant that the value of an employee was calculated on the basis of his alternate use in an organization.

The disadvantage of this method was that it did not take into account the fact that some employees were not scarce and also the fact that a person with specialized knowledge in one field would have zero valuation for alternate work (Shawai, A. S., 2015; Rao, P. M., p. 11).

IV. Standard Cost Model:
This method of valuation has been given by David Watson. Under this method, an accumulation is to be done every year for each grade of employees with respect to the standard costs of recruiting, hiring, training and development (Rao, P. M., p. 12; Ramudu, V. B., 2014).

3.2.1.2 Value Based Models:
“The first truly scientific procedure for finding the money value of human beings was devised in 1853 by Farr. He advocated the substitution of a property tax for the existing English income tax system. The former would include property consisting of the capitalized value of earning capacity. His procedure for estimating capitalized earning capacity was to calculate the present value of an individual's net future earnings”, (Spiceland, J. D., & Zaunbrecher, H. C., 1976).

According to Monetary Value Based Models, promotional policies, annual increments, periodical agreements etc., should be taken into consideration in order to make the estimation of future salaries and wages and the present value of such estimated salaries and wages are to be calculated to get the value of human resource in monetary terms. There are different methods which employ different formulae to calculate Human Resource Value (Salati, A. Y., 2015).
I. Hermanson’s Models:

Hermanson (1964: 4) defines an asset as follows: "The assets are scarce resources (defined as services but grouped by and relating to agents) operating within the entity, capable of being transferred by the forces in the economy, and expressed in monetary terms that can be acquired as a result of current or past, which apparently has the ability to provide future economic benefits" (Andrade, P., & Sotomayor, A. M., 2011, p. 90). Hermanson suggested two models of Human Resource Valuation. These are un-purchased goodwill method and Adjusted discount future wages model.

a) Hermanson’s Un-Purchased Goodwill Method (1964):

Hermanson, R. H., (1964), according to this model, every asset provides income to the organization through its use. Thus, the value of asset should be equivalent to the net income received from the use of such asset. The basis of this method was that every business earns normal rate of return with the use of its resources. If any business earns return over and above normal return, it is un-purchased goodwill of the business which is mainly due to human resources which are not considered in balance sheet. This method was also subject to criticism. This method considered the role of human resource in earning return in excess of normal return and thus it ignores the role of human resources in carrying normal operation or to earn normal returns. Thus, this results in underestimation of value of human resources (Inekwe, Murumba, 2014).

b) Hermanson’s Adjusted Discount Future Wages Model (1964):

Hermanson, R. H., (1964) identifies the human value as the total present value of future salaries and wages multiplied by the average efficiency rate. An efficiency ratio is the weighted average ratio of the return on investment of the given firm to all the firms in the economy for a specified period basically current year and preceding four years are considered for the valuation purpose. Highest weight is given to the current year and in a diminishing manner to the remaining years

Symbolically;

\[ \text{Efficiency Ratio} = \frac{5RFO}{RE0} + \frac{4RF1}{RE1} + \frac{3RF2}{RE2} + \frac{2RF3}{RE3} + \frac{RF4}{RE4} \]
Where:

RFO = Return on firm’s assets for current year.
REO = Return on assets of the economy for current year.
RF1 = Return on firm’s assets for second year.
RE1 = Return on assets of the economy for second year, and so on.

The model is subject to following criticism:

a. The efficiency ratio is subjective.
b. The weighting scheme is purely arbitrary.
c. The valuation period of five years is also without justification.

II. Brummet, Flamholtz and Pyle’s Economic Value Method of Group Valuation (1968):

Brummet, R. L., Flamholtz, E. G., & Pyle, W. C., (1968) suggested valuation of human resource employed in organization on group basis. According to this method, the valuation of employees should be done on group basis by estimating their contribution to the total economic value of the firm. Under this method, firm’s present value is determined by forecasting its future earning and discounting it with the discounting factor. This portion of its present value is allocated to human resource based upon their relevant contribution. This method is used in insurance industry at the time of merger or sale of the firm, to value the sales forces (Flamholtz, E. G, 1999, p. 193).


Lev, B., & Schwartz, A, (1971) propounded a Human Resource Valuation model based on economic approach of Human Resource Valuation. In this model, Lev and Schwartz measured the value of human resource by applying present value approach. Total value of human resource of the firm was represented as present value of total future earning of all the employees of the firm. Company spends money on knowledge and motivation of employees but all such expenditures do not result in creation of asset. An asset is created
only when the increased productivity of an employee exceeds the cost. Such increased productivity of an employee is result of expenditure incurred on employee’s knowledge and motivation. According to this model, the value of human resource is present value of his future earning till retirement from the employment. This method is explained in detail in chapter one under selected parameter for present study.

IV. Flamholtz’s Stochastic Reward Valuation Model (1971):
According to Flamholtz, E., (1971), Human Resource Value is based on expected quantities of service of each employee in each service state, that is, person’s value to an organization depends on the positions to be occupied by him in the organization. The movement of people from one organizational role to another is a stochastic process with rewards. According to this model, the value of human resource is arrived at by multiplying the expected quantities of service of employees in each state with corresponding probabilities of an individual occupying these service states in forthcoming period of time. A "service state" is the organizational role or a position in which an individual is expected to render a specified quantity of services to the organization during a specified time period. The movement of people from one position to another position is a stochastic process with rewards.

There were four steps in the valuation of human assets:

i. Describing the different service or institutional posts that a person could hold in the establishment.
ii. Determination of the number of years of tenure in each service post.
iii. Deciding the monetary worth of every post to the establishment. This can be done either by price quantity approach or income approach.

This model was criticized on different fronts such as difficulties in obtaining valid data regarding the value of a service state, a person’s expected tenure and probabilities of occupying various service states at specified times.
V. Robinson’s Human Asset Multiplier Method (1972):
Giles and Robinson (1972) hypothesized that the goodwill of a firm in terms of supernormal earnings is attributable to its Human Resource. As such, the total value of its human resource is nothing else other than the value of the goodwill of the firm as assessed by the relative price earnings ratio of an organization as compared to the industry average. From the total value of the human resource of an organization, to reflect the value of an individual or of the different groups, the concept of multipliers has been advocated in the model.

An employee multiplier factor is designed to reflect the qualification and technical expertise, experience required to perform the job, personal qualities and attitude, promotional capabilities, replacement scarcity, loyalty and expectations of future service. The multiplier so designed, is proposed to be used as a means of relating to the cost of wages and salaries to the asset value of employees. The method proposes to divide the employees into different categories such as senior management, middle level management, supervisors, clerical and operative grades. The salaries and wages for each of these groups which when multiplied with appropriate multipliers and aggregate, reflect the value of the organizational human resource. The multipliers are then proposed to be adjusted, either scale up or down, so that the total value of human resource so assessed should be equal to the value of the goodwill as hypothesized earlier.

VI. Morse’s Net Benefit Method (1973):
This approach is developed by Morse J. W. (1973). According to Morse, there are two components of Human Resource Accounting viz. Human Asset Accounting and Human Capital Accounting. Both these components deal with two different aspects of total human resource employed in an organization. Morse made an attempt to establish relation between value of human asset and value of human capital employed in an organization. The value of human asset is the net present value of services rendered by the employees to an organization both at individual level and services rendered collectively in team. Whereas the value of human capital employed is present value of future earning of the employees presently working in an organization. Net benefit arises
to the organization only if value of human asset exceeds the value of human capital, that is, the gross value of the services he renders exceeds the value of the expenditures the organization makes to obtain these services. It means employee’s skill and knowledge are valuable to an organization.

This method involves the following steps:

a) Determining the gross value of services to be provided by employees in the future, based on their individual and collective capabilities.

b) Determining the value of future payments (direct and indirect) for employees.

c) Determining the excess of the future value of human resources on the value of future payments. This represents the net benefit to the organization's account of human resources.

d) The present value of net benefit is determined by applying a discount rate predetermined usually the cost of capital. This amount represents the value of human resources for the organization.

VII. Jaggi and Lau’s Human Valuation Model (1974):

Flamholtz’s model considered the probability of career movement from one service state to another service state and also probability of employee's leaving the organization before retirement or death, unlike the Lev and Schwartz model. But, Flamholtz’s model was also criticized stating the difficulty of estimating probability of career movement or exit of each employee before retirement or death. Jaggi and Lau developed a model using Markov chain technique. One of the interesting features of this model was that it considered probability of career movement within the organization on group basis that is homogenous group of employees working in a firm. One of the serious barriers of earlier model of Flamholtz, was difficulty in estimating the probability of career movement of each individual employee, which was taken care in this model of Jaggi and Lau by considering the career movement on group basis (Jaggi, B., & Lau, H. S., 1974, pp. 321-329).

Friedman, A., & Lev, B., (1974) suggested this model. According to them, wage and salary structure of different firms in homogenous industry vary. In other words, employees with same qualification get different salary in different firm. The investment in human resource is the result of difference between the external and internal Human Resource Values. An external Human Resource Value is calculated as the discounted value of the hypothetical wage bills based on the average wages prevailing in the relevant labour market. Internal Human Resource Value is calculated as the discounted value of actual wages to be paid to current employees over their expected service life. This difference in wages and salaries can be attributed to different personnel policies of these firms. The major factors identified for wage differentiation were employees training and indirect compensation.

A positive difference will indicate the discounted value of the stream of wage savings resulting from the firm's personnel policies. The firm spends on extensive training of employees and thus employees are paid below market average wages. While firms providing little training, due to lack of special economies or training expertise, acquires trained employees and pay them above-average wages. Such firms may experience negative difference between external and internal Human Resource Value indicating discounted value of the stream of wage dis-savings resulting from below-average compensation, training, etc. Thus, the wage scale of the firm is determined by its specific policies in hiring, developing, and maintaining the work force.

IX. Chakraborty’s Human Resource Valuation Model (1976):

Sk. Chakraborty of Indian Institute of Management, Calcutta, was the first Indian to make an attempt at valuation of resources. Chakraborty was of the view that human resource should be considered as an asset and should be included in investments. According to this model, employees are divided into two groups that are, managerial group and non managerial group. Average salaries and average tenure of the employees of the two groups are ascertained. Average tenure of the employees in the group is estimated on the basis of past experience and average salary is determined on the basis of salary wage
structure prevalent in the organization. The average salary of the group is multiplied with average tenure of the employees in the group. The value obtained 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 also considered the recruitment, selection, training and development, cost of the employees as deferred revenue expenditure. This deferred revenue expenditure can be written off over expected average stay of the employee in the organization and the deferred revenue expenditure not written off can be shown in the balance sheet as asset. Death or any such incidence may result in premature exit of an employee from the organization. In such case, the balance deferred revenue expenditure of such employee can be written off against the income of the same year of exit (Rao, P. M., 2001, pp. 341).

X. Ogan’s Certainty Equivalent Net Benefits Method (1976):
Certainty Equivalent Net Benefit Model of Ogan is an improvement over the Net Benefit Model. According to this model, the certainty with which the net benefits will accrue in future should also be taken into account while calculating the value of human resources. Certainty equivalent net benefit of an employee is combination of two elements: (1) his or her net benefits, (2) a certainty factor which is comprised of the employee's probability of continued employment and probability of survival.

Net benefits are the result of the difference between expected benefits and total costs. The expected benefit of an individual employee is arrived at by multiplying his or her monetary value benefit potential with his or her individual performance index. The Monetary Value Benefit Potential benefit is the maximum benefit that an employee is expected to generate. The capability of an employee to generate maximum benefit is determined by his education, benefit rate and estimated useful life to the organization. The individual performance index is a measurement that indicates the degree of management's judgments and expectations about the individual's performance. The total cost comprises of total maintenance cost which includes future salaries and wages, start-up costs, recruiting and initial training cost at their historical value and future training and development costs. Thus, the certainty equivalent net benefit is the product of the net
benefits from all the employees and their certainty factor. This represents the value of human resource of the organization (Ogan, P., 1976).

**XI. Watson’s Return on Effort Employed Method:**
This method is developed by David Watson. Under this method, the efforts used in various functions such as buying, manufacturing and selling are measured. Factors that determine the quantity and quality of efforts dispensed are used to measure the contribution made by an employee to perform various functions. These factors include level of grade of work done, effectiveness in performing the job, the experience and efficiency of an individual while the job etc. Total effort of each individual is determined by multiplying these factors together. The aggregate score of all the individuals thus obtained represent the total efforts employed in the organization. This method facilitates the allocation of human resources among the different functions of an organization such as buying, manufacturing and selling as per the ratio of profit to efforts (Watson, D., 1978).

**3.2.2 Non-Monetary Models:**
Non-monetary methods assess the economic value of human resource by applying various indices or ratings and rankings. The non-monetary methods may refer to a simple inventory of skills and capabilities of people within an organization or to the application of some behavioral measurement techniques to assess the benefits gained from the human resource of an organization (Bhagat, M., Dutta, B. K., & Dutta, M., 2011).

**I. Likert’s Causal, Intervening and End Result Variable Model:**
This model was suggested by Likert. According to this model, the trend in organizational earning can be estimated if meaningful relation is established among three variables, these are causal, intervening and end – result variables. This estimated earning if further multiplied by discounting rate, results in the present value of the firm and human resource. Causal variables include behavior and organizational capabilities such as the structure of the organization and management's leadership strategies, skills, behavior, policies, and decisions. These are independent variables and these can be controlled or
altered by organization and its management. The intervening variables are the result of the internal state, health, and performance capabilities of the organization such as motivations, attitudes, loyalties, satisfactions, performance goals, and perceptions of all members and their collective capability for communication, decision making, and effective action. End result variables of the organization are determined by causal and intervening variables. These end result variables include financial and performance data of the organization such as productivity, costs, scrap loss, growth, share of the market, and earnings (Likert, R., & Pyle, W. C., 1971; Akintoye, I. R., 2012).

II. Statistical Based Method:
The descriptive information containing statistics about human resources are collected, used and presented using statistical method as per the requirement of management (Salati A. Y., 2015).

III. Skill Inventory:
Under this method, individual’s capabilities and skills are identified and enumerated. Employees are classified according to their skills. This is one of the basic techniques of evaluating employees of an organization (Flamholtz, E. G, 1999, p. 220) (33).

IV. Performance Evaluation Techniques:
Performance evaluation is a key factor in enhancing the quality of work input there by upgrading the development of an organization. These include rating method, ranking method, attitude measurement and assessment of potential. Some of the modern techniques used to evaluate the performance of an individual are Management by Objectives, Psychological Appraisals, Assessment Centers, 360-Degree Feedback, 720 Degree etc. (Shaout, A., & Yousif, M. K., 2014; Khanna, M., & Sharma, R. K., 2014).
3.3 Conclusion:
The aim of bringing human resource in the category of asset of the organization resulted in series of efforts made in the field of Human Resource Accounting. Many researchers developed different methods of measuring Human Resource Values. While others worked on operationalization of such methods in corporate sector. In broader sense, these methods are divided in two parts viz. Monetary Models and Non-Monetary Models. Methods grouped under Monetary Model calculate Human Resource Value in monetary terms. Monetary Model is further divided into Cost Based Methods and Value Based Methods.

The cost based methods consider the total capitalized cost incurred on employees as Human Resource Value. The popular methods based on cost are Historical Cost Methods, Replacement Cost Model, Opportunity Cost Model, and Standard Cost Model.

Value based methods consider the present value of future projected salaries and wages as the values of human resources. The methods of calculation and duration of valuation are different in different models. Methods based on values are Lev and Schwartz Present value of future earnings model, Flamholtz Stochastic reward valuation model, Jaggi and Lau’s Human Valuation Model, Morse’s Net Benefit Method etc.

Non-monetary methods assess the economic value of human resource by applying various indices or ratings and rankings. These are Likert’s Causal, Intervening and End Result Variable model; Statistical based method and other performance evaluation techniques.

Different researchers in their research study and different companies in valuation of their employees adopted different methods of Human Resource Valuation. In context of Indian corporate sector, Lev and Schwartz model of Human Resource Valuation gained advantage over other models. Many companies in India adopted this model to value their human resource.
3.4 References:


