The research in the area of HRA, to date, has been confined to the development of valid and reliable measures of human resource cost and value and assessing the impact of HRA information on decision making. A number of researchers have made attempts at developing suitable model of monetary and non-monetary measures of human resources. Notably among these are Hermanson[1964], Rensis Liker[1967], Lev and Schwartz[1971], Flammholtz[1971 & 1972], Morse[1973] and Pekin Ogan[1976]. These researchers have identified the variables determining the human resource costs and values by different analytical models.

In his model Hermanson\(^1\) suggests the discounting of a stream of wage payments to people as a measure of a person's value to an organization. However, he suggests the adjustment of this discounted future wage stream by an efficiency factor. He advocates use of this factor on the ground that differential earnings of a firm are attributable to human resources only. This approach also suffers from certain drawbacks. The selection of five years period for giving weights has no justification. Moreover, it is difficult to apply the 'efficiency factor concept in real world situations. There is also no theoretical or empirical justification for giving weights.

Likert\(^2\) developed a conceptional model that
incorporates a number of variables to be measured to arrive at productive capability of an organization. Likert and Pyle define net worth of an organization as "the present value of contributions employees make over their life less costs incurred in acquiring, developing, maintaining and utilizing these services. Likert has identified three classes of variables which are important to the profitability of a firm - casual variables, intervening variables and end-result variables.

The socio-psychological model developed by Likert attempts to provide useful information, though non-monetary, about the present and the expected future attitudes, behaviour and satisfactions of a firm's human resources. However, doubts have been expressed regarding the validity of Likert's assumption that performance is a function of satisfaction. The research studies conducted later by Likert and Bowers suggested opposite relationship indicating that satisfaction is a function of performance and vice-versa.

According to Flamholtz the ultimate measure of an individual's value to an organization is his expected realisable value. There is a dual aspect to an individual's value (i) the amount an organization could potentially realize from his service if he remains an employee of the organization during the period of his productive service life and (ii) the amount actually expected to be derived,
taking into account the person's likelihood turnover. The former is the person's expected conditional value while the latter is his expected realisable value. The model is based on the notion that a person's value to an organization depends upon the positions to be occupied by him in the organization. An individual generates values for an organization as he occupies and moves to different roles and renders services to the organization. The movement of people from one organizational role to another is a stochastic process. As people move and occupy different organizational roles (i.e. service states), they render services (i.e. rewards) to the organization. However, the roles they will occupy in future will have to be determined probabilistically for each individual.

This model has been criticised by Ronen in these words, "The model presented by Flamholtz does not suggest a quantitative relationship between the criteria and value dimensions. Moreover, the model does not suggest even an ordinal relationship between the hypothesized criteria and the value dimensions."\textsuperscript{4}

Study conducted by Prof. Morse\textsuperscript{5} considered the inter-relationship in an organization between the value of human assets to the organization and the value of human capital to the employees of the organization. In his opinion, the present value of human assets equals total present value of human resources less present value of payments to employees. The study made by Prof. Morse has
made a valuable contribution by specifying the human resource value algorithms.

The model given by Jaggi and Lau⁶ is based on the valuation of groups rather than individuals. The group in an organization refers to a homogenous group of employees who may be working in different departments. In their model, Jaggi and Lau have suggested the use of Markov Chain Representation to consider the career movements of the employees within the organization and the chances of their retirement or death.

Although this model has improved the reliability of the probability measure (P) in the Flamholtz's Model, the study has not suggested any specific guidelines to improve the validity of the expected services measurement, as propounded earlier.

The model of measurement of human capital suggested by Baruch Lev and Aba Schwartz⁷ is based on the economic concept of human capital. Capital is defined as a source of income over a period of time and its worth is the present value of future incomes discounted by a certain rate. The model identifies an individual's expected economic value to the organization to his future earnings for his remaining active service life. His future expected income stream is discounted by an appropriate rate to arrive at the present value of his services.
However, the model suffers from various deficiencies such as - A person's value to an organization is not determined entirely by the person's inherent qualities, traits and skills but by the organizational role in which the individual is placed. It also doesn't take into account the possibility and probability of an individual leaving the organization for reasons other than death or retirement. The assumption of the model that people will not make role changes during their career with the organization also seems to be unrealistic.

Friedman and Lev\textsuperscript{8} rely on the economic theory of human capital for measuring the firm's investment in human resources. Their model is based on firm vs. market wage relationships. They provide information only about how investment differ from industry averages. However, like the Lev and Schwartz Model it has typical problems of discounting the differential wage flows.

Myres and Flowers\textsuperscript{9} suggest use of five dimensions in valuing human resources of an organization. These are: knowledge skills, health, availability and attitude. The individual's knowledge enables him to direct his skills and his health enables him to apply them... The five dimensions are factorial rather than additive – if any one is lacking, the others are rendered correspondingly ineffective. The model suggests the use of attitude score and their respective weights to arrive at an attitude index for a group of employees.
However, a major shortcoming of the model is that the managers and the accountants are not familiar with the area of attitude measurement. The complexities involved in the use of the model in real-world situations make it not only expensive, but also impracticable. Besides, the information generated by the model may not be as useful to the external users as it is to the management for internal purposes.

In the Pekin Ogan's model which he calls as 'Value-oriented quantification approach', the total adjusted net present human resource value of a professional service organization is equal to the aggregate discounted certainly equivalent net benefits of the employees in the organization. He presents a new concept of determination of certain equivalent net benefits stream for each employee in an organization, which consists of two elements (a) his or her net benefits which are a function of the employee's expected benefits and total costs; and (b) a certainty factor which is comprised of the employees probability of continued employment and probability of survival. This model is an improvement over other models mentioned earlier because it takes into account the 'costs' generated by the employees for the organization which the other models have ignored. It also makes use of the 'certainty factor' designed to measure the probability of continued employment and probability of survival. However, a major shortcoming
of the model is that it can be applied only in those organizations where 'costs' and 'benefits' of employees can be traced fairly objectively.

Another area which has been of interest to researchers is the inclusion of HRA information in accounting reports and its impact on decision making. In this sphere notable contributions are by Elias[1972], Hendricks[1976], Schwan[1976], Tomassini[1977], Oliver and Flamholtz[1978], Acland[1983], Bayes[1985] and Wambsjiang[1986]. A research studies by Eric Flamholtz and Tomassini have been published so far. They relate to the effects of HRA on managerial decisions.

In an experimental study with 25 practising CPA's as subjects, Flamholtz\textsuperscript{11} considered the impact of human resource data on a personnel allocation decision. He found significant differences in decisions by those who used traditional trait evaluation and those who used both the monetary and non-monetary human resource value data.

Tomassini\textsuperscript{12} conducted an experimental study which focussed on the effect of HRA cost estimates on managerial decision preferences in a personnel lay off context. The subjects in his experiment consisted of 52 graduate students of the University of Texas at Austin. The subjects were divided into two groups: an experimental group, which had access to conventional accounting data, HRA data and a controlled group which had access to only conventional
accounting data. Tomassini found that preferences of the two groups towards the decision alternatives were significantly different for each alternative considered. Interestingly, it was found that most experimental group subjects altered the quantified HRA cost estimates, typically assuming that these estimates were conservative. Also, the control group subjects attempted to estimate the unquantified replacement and retraining costs to compare them with the pay roll cost savings.

Empirical evidence on the usefulness of HRA for decision making by external users is available from the studies made by Elias, Hendricks and Schwan. Nabil Elias\textsuperscript{13} conducted a laboratory experiment to examine the effect of human resource outlay cost data on stock investment decisions. His study was focused on three related questions, viz.,

(i) Will the reporting of human assets in the financial statements on the historical cost basis cause investment decisions to be different?

(ii) When human assets are reported in the financial statements, will the investment decisions be the same for different groups with different levels of sophistication in accounting and different orientations?

(iii) Related to the previous question, what are the
background or moderating variables that may cause decisions to be different?

The participants included several groups with different levels of sophistication in, and orientation to, accounting: Chartered Financial Analysts, a random sample of financial analysts, and Certified Public Accountants in the Minneapolis-St. Paul area, as well as student groups enrolled in Accounting and Finance courses in the University of Manitoba. Elias found that, for his experimental groups, the inclusion of human asset data did affect the decisions of certain groups of subjects, but not all the subjects. The differences observed were statistically significant. Elias also measured the strength of the relations among variables by the contingency coefficient and found that it was not very strong. His attempt to identify background variables that might explain differences in decisions did not yield any statistically significant results.

In another research study, Sangeladji designed his enquiry so as to ascertain the usefulness of two measurement models for human asset valuation. Questionnaires and sets of financial statements were used to solicit the opinion of Certified Public Accountants, Chartered Financial Analysts, Trust and Finance Officers of Banks and Trust Companies, Controllers and Managers of large corporations as well as students. The sample had nationwide representation. The findings of the study revealed that human resource information was useful, but the degree of
usefulness varied between the experimental groups; managers perceived the lowest utility for such information, while users among the professional and investor groups perceived a higher utility. Further, many of the participants did not express strong preferences for receiving monetary information about a firm's human resources for making investment decisions, while some showed great interest in receiving and utilising non-monetary information, like the age, experience, education and health of senior managers, stability and loyalty of employees, record of employee turnover, assessment of the availability of qualified replacements for key positions, etc.

The empirical study, conducted by Hendricks, examined the impact of human resource accounting information on stock investment decisions and the reasons thereof. Like Tomassini, he used accounting and finance students at a large Mid-Western University in the United States. Some of the students were business persons, taking the finance course in the evening. All the subjects had a high level of sophistication in finance and accounting. The subjects were required to make two stock investment/capital allocation decisions, one with and one without human resource cost data. The differences in the two decisions were statistically significant, based upon a difference of correlated means t-test. Although Hendricks found a significant correlation between the decisions, difference measure and the subject's age and work experience, he was
unable to establish such relationship among other demographic and personality variables.

Another research study by Schwan\textsuperscript{16} considered the effects of human resource cost measures on decision-making by bankers. He found that the inclusion of HRA data in published financial statements resulted in (1) significantly different ratings of management's preparedness to meet future challenges and opportunities and (2) statistically different predictions of a firm's net income.

**Human Resource Accounting Researches in India**

In India, also a few researchers have done work on the topic of Human Resource Accounting. A few of the articles identifying the importance of HRA information and summarizing the existing models for finding out the cost and value of Human Resources have appeared during the past decade. Notably among these are the articles by Chakravarty, S.K., Ranga Rao, Y., Rajeshwar, N., Rao, D.P., Sayeed, M., Malik, R.K., Joshi, T.D., Mehrotra, H.C., Munirani Reddy, M., Tiwary, P.

One research study in this area was conducted by D.P. Rao\textsuperscript{17} in Hindustan Ship Yard, Vishakhapatnam. The basic objective of the study was the designing, appreciation and usefulness of HRA in the above unit. Another research was conducted by R.K. Gupta\textsuperscript{18} (Man Power Management and Human Resource Accounting, 1986) - to find out the usefulness and implications of HRA for different categories.
of users. The study conducted by R.K. Malik\textsuperscript{19} (1989) mainly highlights investment decisions, given the value of HRA, and the findings of Poonam Sharma reveal the system of HRA in Bharat Heavy Electrical Ltd. However, very few studies have been undertaken to compare the usefulness of HRA in the private and public sector enterprises in India. The primary objective of the present study is to obtain the view points of executives of selected enterprises from both sectors by categorising each sector into two parts:

(1) Those practising HRA, and

(2) Those not-practising HRA.


