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## *Human Resource Accounting and Productivity Analysis of Employees in Selected Maharatna Public Enterprises: A Comparative Study*

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**Abstract:** *Human resource accounting includes a profile of human assets value, human resource cost, compensation, training & development, human resource productivity and the total wealth of the concern. It is an accounting technique concerned with the measurement of the cost and economic value of human resources to take decision regarding human resources and measure the financial efficiency of an organisation in totality.*

*The present paper imperialises an empirical study based on secondary data focused on objective 'to compare the human resource accounting practices followed by selected Maharatna PEs in India' and the period of study extends from the financial year 2004-2005 to 2013-2014. It concludes that Tpe in IOCL much higher than other two companies but it has a high degree of variation and HRCpe shows that ONGC focuses more on welfare of his human resources but in term of variance, NTPC is more stable during the period of study. The result of Anova for various key variables among the sampled PEs shows the differences are found significant at 5% level.*

**Keywords:** *Human Resource, Productivity of Employees, HR variables, HR Cost, Value Added per Employee, Anova.*

### I. INTRODUCTION

Success of corporate undertakings purely depends upon the quality, character, skills and competence of its human resources. Without human resources and efforts physical resources like building, plants & machinery, offices, computers, money, materials are unproductive. Human element is the most important input in any corporate enterprises. Human resource accounting must play an important role in the success of an organisation. Human resource accounting reflected the potential of the human resources of an organisation in monetary terms, in its financial statement.

Human resource accounting includes a profile of human assets value, human resource cost, compensation, training & development, human resource productivity and the total wealth of the concern. It is an accounting technique concerned with the measurement of the cost and economic value of human resources to take decision regarding human resources and measure the financial efficiency of an organisation in totality.

The concept of human resource accounting was first developed by Sir William Petty in the year 1691. However, it was Rensis Likert, social psychologist, whose work originated human resource accounting in the 1960. For the first time HRA was implemented by R.G. Barry corporation during 1968 to 1973. With the passage of time, HRA was applied in various organisations all over the world.

As far as India is concerned, HRA has not been introduced so far as a system. In India, the pioneering efforts regarding the introduction of HRA Practices have been made by such companies known as 'Maharatna Public Enterprises'. The first time

HRA was introduced by BHEL in 1974-75 followed by ONGC in 1981-82, SAIL in 1983-84, OIL 1984-85, and NTPC in 1986-87. After it HPCL, IOCL and other PEs have also adopted this system.

### A. Maharatna Public Enterprises

In 2009, the Government of India established the Maharatna status, with a view to grant enhanced autonomy to the boards of identified large sizes Navratna PEs to facilitate further extension of their operations. The Maharatna PEs having the power of Navratna status, in addition to have been granted additional autonomy and power for investment in a project and to develop its human resources. For Maharatna PEs the investment ceiling has been raised from Rs. 1,000 crore to Rs. 5,000 crore. The Maharatna firms can now be free to decide an investment of up to 15 per cent of their net worth in a project.

There are multiple factors and criteria for granting 'ratna' status. However, major criteria of awarding **Maharatna** status are:

- Having Navratna status.
- Should have significant global presence.
- Listed on Indian stock exchange with minimum prescribed public shareholding under SEBI regulations.
- An average annual net profit after tax of over Rs. 2,500 crore during the last three years. Earlier it was Rs. 5,000 crore.
- The average annual Net worth of more than Rs. 10,000 crore during the last three years. Earlier it was Rs. 15,000 crore.
- The average annual Turnover of more than Rs. 20,000 crore during the last three years. Earlier it was Rs. 25,000 crore.

Currently 7 Maharatnas, 14 Navratnas and 53 Miniratnas-I and 16 Miniratna-II Public Enterprises are running in India. Maharatna PEs are as follow:

1. Steel Authority of India limited (SAIL)
2. Oil and Natural Gas Corporation (ONGC)
3. Indian Oil Corporation Limited (IOCL)
4. National Thermal Power Corporation Limited (NTPC)
5. Coal India Limited (CIL)
6. Bharat Heavy Electricals Limited (BHEL)
7. Gas Authority of India Limited (GAIL)

The SAIL was granted Maharatna status on 19<sup>th</sup> May 2010 whereas **ONGC**, **IOCL**, and **NTPC** were granted this status on 16 Nov. 2010. CIL was conferred with Maharatna status on 11 April 2011. Earlier Government of India has granted with Maharatna status to BHEL and GAIL on 1 Feb 2013.

## II. RESEARCH PROBLEM

It is a very crucial step to select and define the research problem. This research work has been made an in-depth study of HRA Practices in Maharatna Public Enterprises that were established near about 50 years ago. These have a vital workforce that's why valuation of human resources is crucial importance. These organizations have been selected on the assumption that human resource accounting being an emerging field in accounting in India and large organizations might introduce it in their annual reports.

It is evident from the reviewed literature that some studies are made on Human Resource Accounting Practices exclusively in a single organization and few are carried out comparing the HRA Practices in public and private sector undertakings. Besides,

some stray research articles and papers are found on Human Resource Accounting practices. But surprisingly no any comprehensive study is carried out combining the Human Resource Accounting Practices being followed by different public sector undertakings. Therefore the present study is a maiden research attempt to fill this gap.

### III. OBJECTIVE OF THE STUDY

This study mainly confined **to compare the Human Resource Accounting Practices followed by selected Maharatna PEs in India**. Along with this, various sub-objectives are as follow:-

- a) To compare the cost incurred on employees in selected Maharatna PEs.
- b) To compare the Productivity of employees in selected Maharatna PEs.

### IV. RESEARCH DESIGN

#### A. Scope of the Study

This is a micro level study. The study has been confined to appraise the Human Resource Accounting Practices in Maharatna PEs. The study mainly cover HRA Practices in Maharatna PEs with a view to making meaningful study of the subject a comparison of HRA Practices in selected Maharatna public enterprises i.e. ONGC, NTPC and IOCL have also been made.

#### B. Universe or Population Size

The total number of companies comes under Maharatna Public Enterprises that are seven.

#### C. Sampling Unit

Three Maharatna PEs i.e. ONGC, NTPC and IOCL has been selected as sample unit. The selection is based on highest Net-worth.

#### D. Type of the Study

Based on the objective, the present study is descriptive in nature.

#### E. Period of the Study

The period of study extends from the financial year 2004-2005 to 2013-2014. Thus period of 10 years have been taken for the purpose of objective analysis in the study.

#### F. Collection of Data

The data and information is the base of any research. This study is based on the information collected mainly by secondary authentic sources in addition to information collected through secondary sources. Secondary sources include annual reports, reports of C.A.G., Ten year digest and websites of the companies. A number of books on human resource accounting and related topics, journals, magazines, newspapers have also been used to develop the conceptual base of the study.

The data collected have been classified and arranged in suitable tables so that meaning inferences could be drawn and convenient for analysis.

#### G. Analysis of Data

The analysis has been carried out by making use of various statistical tools such as percentage, ratio analysis, descriptive statistics and Anova etc. as per the requirement on the tabulated data to analyse the same and bring out the hidden fact. Besides, graphical representations of data have also been made using statistical methods like graphs and bar diagrams.

## V. ANALYSIS AND DISCUSSION

## A. Analysis of Cost on Social Security as a % of Cost on Employee in selected Maharatna PEs

H<sub>0</sub> There is no significance difference of percentage Cost on Social Security among sampled PEs.

**Table-I Descriptive Statistics on Cost on Social Security as a % of Cost on Employee in ONGC, NTPC and IOCL i.e. Sampled Companies**

		Min	Mx.	Average	Variance	CAGR%
Cost on Social Security as a % of Cost on Employee	ONGC	19.61	38.26	28.36	45.03	5.74
	NTPC	13.93	28.27	19.04	28.02	-7.56
	IOCL	23.60	50.59	34.01	61.75	-3.08

Source: Authors' calculations on the data compiled from annual reports of Sampled Companies

Table I shows the Cost on Social Security as a % of Cost on Employee and it describes that the NTPC expend average 19.04% on Social Security as a % of HR Cost i.e. minimum than other two companies. Expense on social security undertook by NTPC is more stable than other two but its negative growth shows the declining trend. IOCL expend average 34.01% on social security i.e. larger than other two companies but it is also indicates negative growth and high variance during the period of study.

**Table-II Result of Anova for Cost on Social Security as a % of Cost on Employee in Sampled Companies**

	Source of Variation	SS	df	MS	F	P-value
Cost on Social Security as a % of Cost on Employee	Between Groups	1142.11	2	571.05	12.709	0.0001
	Within Groups	1213.21	27	44.93		

The result of Anova for Cost on Social Security as a % of Cost on Employee is significant ( $p < 0.05$ ) which reject the H<sub>0</sub> and shows that the percentage Cost on Social Security is significantly different for ten years.

**B. Comparative Analysis about the key variables of HR Accounting related to productivity among the selected Maharatna PEs**

Table III concerns with various key variables of human resource accounting related to HR productivity i.e. Turnover per Employee (TpE), Total Expenses per Employee (TEpE), Operating Profit per Employee (OPpE), Net Profit per Employee (NPpE), Human Resource Cost per Employee (HRCpE) and Value Added per Employee (VApE). This table discloses the descriptive statistics on above mentioned variables for comparative analysis among Selected Mataratna PEs.

**Table-III Descriptive Statistics on key variables of HR Accounting related to productivity in selected Maharatna PEs**

Variables		₹ in Million			Variance	AAGR(%)
		Min	Mx.	Average		
Turnover per Employee	ONGC	13.06	25.30	19.61	16.90	7.63
	NTPC	10.94	30.47	19.76	45.50	12.12
	IOCL	45.43	140.03	91.33	1029.38	14.20
Total Expenses per Employee	ONGC	7.95	17.67	12.81	10.33	9.64
	NTPC	8.84	25.72	16.34	31.99	12.79
	IOCL	43.85	135.73	88.68	987.62	14.19
Operating Profit per Employee	ONGC	6.49	11.12	9.20	2.28	6.49
	NTPC	3.61	7.52	5.32	1.81	8.26
	IOCL	2.44	5.39	3.85	0.79	9.43
Net Profit per Employee	ONGC	3.59	7.63	5.36	1.45	7.64
	NTPC	2.69	5.27	3.64	0.68	6.73
	IOCL	0.87	2.97	1.87	0.41	24.40
Human Resource Cost per Employee	ONGC	0.76	3.14	1.84	0.63	19.45
	NTPC	0.42	1.64	0.98	0.18	17.43
	IOCL	0.62	2.13	1.38	0.33	17.49
Value Added per Employee	ONGC	7.58	15.82	12.08	7.03	8.85
	NTPC	4.16	10.98	6.92	5.32	11.53
	IOCL	3.35	9.99	5.93	5.30	13.44

Source: Authors' calculations on the data compiled from annual reports of Sampled Companies

Turnover per Employee ratio depicted the general employee productivity in terms of revenue from operation. In the table III, TpE in IOCL is average 91.33 million per year with the highest growth rate (14.20) i.e. much higher than other two companies but it have a high degree of variation in TpE during period of study. In result it may be say that IOCL is performing better in terms of TpE than other two samples PEs.

Total Expenses per Employee is a measure to control the organisational cost. TEpE in IOCL is also highest (₹ 88.68 million) as TpE during the studied period. It also shows highest growth with high variances.

Operating Profit per Employee is seen a gauge to focus on organisational cost and return on them. OPpE in ONGC shows the maximum value (11.12) with average ₹ 9.20 million per year that is better than other two, while in term of growth IOCL is greater with more stable but notwithstanding the turnover much less profit.

Net Profit per Employee is seen a measure to focus on employee related cost and return on them. As per OPpE, ONGC gains higher NPpE with average ₹ 5.36 million per year but in term of growth IOCL has the most (24.4%) with more stability.

Human Resource Cost per Employee includes the salary, wages and all the welfare expenses. HRCpE is also higher in case of ONGC in term of both average (₹1.84 million) and growth (19.45%). It shows that ONGC focuses more on welfare of his human resources. In term of variance, NTPC is more stable during the period of study.

Value added is a higher portion of revenue for integrated companies. Total value added is very closely approximated by total labour expense plus operating profit. The first component (total labor expense) is a return to labour and the second component (operating profit before depreciation) is a return to capital (including capital goods, land, and other property). Value Added per Employee depicted in the table III reveals that it is higher in case of ONGC with average (₹12.08 million per year), but higher growth sparkles by IOCL with more stability.

### C. Comparative Analysis about significance differences of key variables of HR productivity among the selected Maharatna PEs i.e ONGC, NTPC and IOCL

Table IV indicates testing the difference of key indicators among the selected maharatna PEs. For this purpose Anova test is used with the following hypotheses:

H<sub>0</sub> There is no significance difference of Turnover per Employee among the selected maharatna PEs.

H<sub>0</sub> There is no significance difference of Total Expenses per Employee among the selected maharatna PEs.

H<sub>0</sub> There is no significance difference of Operating Profit per Employee among the selected maharatna PEs.

H<sub>0</sub> There is no significance difference of Net Profit per Employee among the selected maharatna PEs.

H<sub>0</sub> There is no significance difference of Human Resource Cost per Employee among the selected maharatna PEs.

H<sub>0</sub> There is no significance difference of Value Added per Employee among the selected maharatna PEs.

**Table-IV Result of Anova for various key indicators among the selected Maharatna PEs.**

Variables	Source of Variation	Sum of Squares	df	Mean Square	F	P-value	Result at 5% level of significance
Turnover per Employee	Between Groups	34221.28	2	17110.64	47.017	0.0000	H <sub>0</sub> rejected
	Within Groups	9825.952	27	363.92			
Total Expenses per Employee	Between Groups	36673.79	2	18336.89	53.411	0.0000	H <sub>0</sub> rejected
	Within Groups	9269.49	27	343.31			
Operating Profit per Employee	Between Groups	152.83	2	76.42	47.041	0.0000	H <sub>0</sub> rejected
	Within Groups	43.86	27	1.62			
Net Profit per	Between	61.046	2	30.52	36.015	0.0000	H <sub>0</sub> rejected

Employee	Groups						
	Within Groups	22.88	27	0.85			
Human Resource Cost per Employee	Between Groups	3.71	2	1.86	4.882	<b>0.0155</b>	H <sub>0</sub> rejected
	Within Groups	10.27	27	0.38			
Value Added per Employee	Between Groups	218.03	2	109.02	18.529	0.0000	H <sub>0</sub> rejected
	Within Groups	158.85	27	5.88			

Table IV reflects the result of Anova for various key variables among the samples PEs. It shows the differences are found significant at .05 level ( $p < 0.05$ ) in all cases of productivity variables of human resources which reject the H<sub>0</sub> and demonstrates that the TpE, TEpE, OPpE, NPpE, HRCpE and VApE are significantly different for ten years.

The differences in all cases of productivity variables are also found significant at .01 level ( $p < 0.01$ ) except in the case of HRCpE where ( $p > 0.01$ ) that shows there is no significance difference for ten years.

## VI. CONCLUSION

- 1) There is lack of statutory provisions and lack of accounting standards regarding HRA in India. Hence, the Indian companies do not have any compulsion to disclose HRA information in their annual reports. Therefore, the disclosure of HR cost and value should be made mandatory under the Indian Companies Act 2013 and the ICAI should formulate and make mandatory the standards for HRA so that more and more business enterprises can adopt this technique. It may be made mandatory for companies with capital exceeding certain limit.
- 2) The major contribution in human resource accounting was made by Rensis Likert in the 1960. For the first time HRA was implemented by R.G. Barry corporation during 1968 to 1973. In India, HRA Practices have been made by such companies known as 'Maharatna Public Enterprises'. The reason for granting Maharatna status is providing more autonomy to invest in a single project. The first time HRA was introduced by BHEL in 1974-75 followed by ONGC in 1981-82, SAIL in 1983-84, OIL 1984-85, and NTPC in 1986-87. After it HPCL, IOCL and other PEs have also been adopted this system.
- 3) The NTPC expend minimum on Social Security as a % of HR Cost than other two companies and its negative growth shows the declining trend but expense on social security undertook by NTPC is more stable than other two. IOCL expend on social security larger than other two companies but it is also indicates negative growth and high variance during the period of study. The result of Anova for this reject the H<sub>0</sub> and shows that the percentage Cost on Social Security is significantly differ for ten years.
- 4) Turnover per Employee in IOCL much higher than other two companies but it has a high degree of variation in TpE and Total Expenses per employee is also highest during the studied period. It means high turnover could not convert in high profit. Profit per Employee is seen a gauge to focus on organisational cost and return on them. Human Resource Cost per Employee shows that ONGC focuses more on welfare of his human resources but in term of variance, NTPC is more stable during the period of study.
- 5) The result of Anova for various key variables among the sampled PEs shows the differences are found significant at .05 level ( $p < 0.05$ ) in all cases of productivity variables of human resources which reject the H<sub>0</sub> and demonstrates that the TpE, TEpE, OPpE, NPpE, HRCpE and VApE are significantly different for ten years. The differences in all cases of productivity variables are also found significant at .01 level ( $p < 0.01$ ) except in the case of **HRCpE** where ( $p > 0.01$ ) that shows there is no significance difference for ten years.

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