



Human Resource Accounting as a Determinant of Profitability: An Empirical Study on NTPC Co. Ltd.

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Abstract: This paper examines the role of Human Resource Accounting (HRA) in enhancing the profitability of NTPC Co. Ltd., emphasizing the contribution of investments in human resources to financial success. The paper also discusses the conceptual framework of HRA. It discusses challenges in implementing HRA, such as the absence of standardized valuation techniques, reliance on traditional accounting methods, and difficulties in measuring intangible workforce qualities like leadership, innovation, and safety culture. The main findings reveal a strong positive correlation between Net Profit and both Gross Employee Cost (GEC) and Staff Training Cost (STC), indicating that increased spending on employee compensation and development significantly enhances profitability. Conversely, the link between Earnings per Share (EPS) and the number of employees is weak and statistically insignificant, indicating workforce size does not influence shareholder returns. The review underscores the importance of strategic HR investments for NTPC's sustained growth, despite current valuation limitations. It recommends developing a standardized HRA framework, improving training assessment methods, and incorporating intangible HR metrics. Future research should explore advanced valuation models and cross-company analyses to better integrate HRA into strategic decision-making.

Key word: NTPC Co Ltd, HRA, Net Profit, GEC, STC

1.INTRODUCTION:

NTPC Limited is India's leading integrated power production company, supporting the country's development with sustainable, dependable, and cost-effective energy for more than fifty years. Founded in 1975, NTPC has grown from primarily a thermal power producer into a diversified energy conglomerate, spanning the entire energy sector, including traditional and renewable power generation, coal mining, power trading, e-mobility, and green hydrogen initiatives. As a major and diverse energy producing organization, NTPC's achievements largely rely on its skilled and dedicated staff. Human Resource Accounting acknowledges investments in training, development, and talent management as important assets. This approach helps NTPC improve workforce skills, boost productivity, and ensure long-term sustainability in the changing energy industry.

Human Resource Accounting (HRA) was created to acknowledge employees as valuable assets instead of just expenses. It tracks investments in areas such as training and development, enabling organizations to assess the real worth of their workforce. This approach aids in better planning, more efficient utilization of resources, and enhances employee motivation and productivity. Hosseini (2012) states that Human Resource Accounting (HRA) considers expenses related to employees, like training and development, as investments or assets. Conversely, Hattikal (2017) notes that conventional accounting methods categorize these costs as routine expenses, which can result in undervaluing the actual worth of human resources. According to Kodwani & Tiwari. (2007), Human Resource Accounting (HRA) improves organizational planning by demonstrating the advantages of investing in employees. Additionally, when employees feel valued by the organization, they become more motivated and perform at higher levels.



Human resource management is concerned with the human beings in an organization. It reflects a new outlook which views organizations manpower as its resources and assets. Human resource is the total knowledge, abilities, skills, talents and aptitudes of an organization's workforce. The values, ethics, beliefs of the individuals working in an organization also form a part of human resource.

Human Resource Accounting is the process of identifying and measuring data about human resource and communicating this information to interested parties so as to analyze it if any deficiency is discovered and steps taken to remove it.

Thus, it involves measurement of all the cost/investment with recruitment, placement, training and development of employees and also make quantification of the economic value of People in an organization. HRA is the measurement and reporting of the cost and value of people in organization resources. Human Resource Accounting views the people as their assets and cost of investment on human resources are also evaluated to fix the value of human resources and their productivity to the organization,

Thus it helps management make better decisions regarding recruitment, training and development of human resources in the organization. It also helps to measure acquisition financial reporting and performance development of employee.

2.LITERATURE REVIEW:

Human Resource Accounting (HRA) has become an important method for assessing the monetary worth of human assets and their impact on a company's profitability and performance. Many research studies have examined its use in various industries and regions, consistently emphasizing its beneficial effect on financial results.

Bakhtiar et al. (2023) showed that incorporating Human Resource Accounting (HRA) into company financial reports enhances decision-making and profitability, as evidenced by PT. Khatulistiwa Mulia Indonesia. Similarly, Ezejiofor et al. (2017) highlighted that acknowledging human capital through salary increases and retirement perks boosts employee performance and loyalty, leading to higher profitability. Supporting this, Adenola et al. (2022) discovered that improvements in staff training, development, and compensation substantially boost the profitability of Nigerian conglomerates.

Kashanipour and Farooji (2022) found that, in companies listed on the Tehran Stock Exchange, there is a strong positive link between human resource accounting (HRA) and organizational profitability, indicating that accurately assessing human resources enhances financial outcomes. Correspondingly, Lukman and Abdulrasaq (2023) argued that Human Resource Accounting (HRA) impacts employee turnover, earnings per share, and return on capital employed by recognizing investments in training and development.

Motoniu et al. (2010) emphasized that recognizing human resource investments as assets enhances strategic decisions by showcasing employee skills and knowledge in financial statements. Khurshid (2017) also suggested that acknowledging and measuring human capital promotes the growth of talent, boosts motivation, and contributes to overall financial prosperity. Jena et al. (2022) demonstrated through their research in Odisha's small-scale industries that implementing effective Human Resource Accounting (HRA) practices leads to improved financial results and greater operational efficiency.

From a conceptual standpoint, Cherian and Farouq (2013) highlighted that while human resources are vital assets for organizations, the lack of legal requirements for HRA reporting continues to pose a challenge. Similarly, Mohiuddin and Banu (2017) examined the conceptual framework of HRA, highlighting its importance in strategic planning and managerial decision-making, while also recognizing its limitations and criticisms. Obara and Odinioha (2013) criticized conventional accounting methods for wrongly treating human capital investments as expenses, advocating for precise measurement and reporting of human assets in the knowledge-based economy.

The reviewed literature consistently indicates that Human Resource Accounting (HRA) plays a strategic role in improving corporate profitability, financial results, and long-term growth of company. However, its widespread implementation is hindered by the absence of standardized reporting and valuation techniques, despite the acknowledged advantages.



3.OBJECTIVE OF THE STUDY:

The present study is being conducted with the following objectives:

- To study the impact of human resource factors on the profitability of NTPC Co Ltd in India.
- To determine the relationship between the earnings per share and no of employees in the company
- To identify the challenges and limitations in measuring and reporting human resource value in the organization
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4.RESEARCH METHODOLOGY:

The present study is mainly based on secondary data. The one company is selected for the purposive sampling methods. The choice to concentrate on a single NTPC unit during this period is deliberate, as it facilitates an in-depth analysis of how human resource factors impact the company's profitability. Focusing on one unit ensures consistent data, minimizes differences between organizations, and leads to more precise and meaningful findings. The data has been analyzed using various statistical tools like Correlation and Regression, t-test by SPSS. The figures for the purpose of the analysis have been collected from various sources like annual reports of the company for a period of fourteen years from 2006-07 to 2024-25.

Functions:

$$Y = f(X)$$

Dependent Variables

$$Y_1 = \text{Net Profit}$$

$$Y_2 = \text{Earnings per share}$$

Independent Variables

$$X = f(X_1, X_2, X_3) \text{ (Independent variables)}$$

$$X = \text{Human Resource Accounting (HRA)}$$

Where:

$$X = X_1 + X_2 + X_3 + \mu \text{ (Independent variables)}$$

$$X_1 = \text{Gross Employee Cost (GEC)}$$

$$X_2 = \text{Staff's Training Cost (STC)}$$

$$X_3 = \text{Log (Average no of Employee)(Emp)}$$

$$f = \text{Functional dependency of the relationship}$$

$$u = \text{Random Variable (error term).}$$

Functional Relationships

$$\text{Net Profit (Y}_1\text{)} = f(\text{GEC, STC}) \dots\dots\dots F_1$$

$$\text{Earnings per share (Y}_2\text{)} = f(\text{NEM}) \text{-----} F_2$$

Model specification:

$$\text{Net Profit} = \alpha_0 + b_1 \text{ GEC} + u \text{-----} (1)$$

$$\text{Net Profit} = \alpha_0 + b_1 \text{ STC} + u \text{-----} (2)$$

$$\text{Earnings per share} = \alpha_0 + b_1 \text{ Emp} + u \text{-----} (3)$$

5. HYPOTHESES OF THE STUDY:

The following hypotheses have been set for the study, based on the above mentioned objectives

Relationship between Human Resource Factors and Profitability

H₀₁ = Gross employee cost does not impact on the profitability of the Company

H₀₂ = Staff's Training cost has no impact on the profitability of the Company.

Relationship between Human Resource and Earnings per Share

H₀₃ = There is no significant relationship between the earnings per share and the no of employees



6. DATA ANALYSIS:

It consists of inspecting, cleaning, and interpreting data to uncover patterns, connections, and insights that aid in forming significant research findings. It also offers a summary of the main features, such as average values and variability, that aid in understanding the general distribution and trends within the data analyzed.

Table-1: Descriptive Statistics

Particular	N	Minimum	Maximum	Mean	Std. Deviation
Net Profit	19	6532.15	19649.41	11597.4611	3747.43864
Remuneration of the Employee	19	1170.30	5724.67	4218.7379	1412.16705
Training Cost of the Employee	19	370.00	949.34	720.8668	204.67831
Valid Number	19				

From the table-1, it can be observed that Net Profit of NTPC Ltd fluctuates significantly, ranging from 6,532.15 to 19,649.41, with a high average of 11,597.46. Employee remuneration shows considerable variation, spanning from 1,170.30 to 5,724.67, with an average of 4,218.74. In contrast, training expenses are relatively consistent, ranging between 370.00 and 949.34, with an average of 720.87.

Objective No-1: To study the impact of human resource factors on the profitability of NTPC Co Ltd in India

Table-2: Model Fitness-Impact of GEC on Profitability

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.741 ^a	.549	.523	975.74649

a. Predictors: (Constant), Net Profit

The model shows a strong correlation ($R = 0.741$), accounting for approximately 54.9% of the variability in profitability. The adjusted R^2 (0.523), which indicates a good overall fit and it is reliable predictive capability.

Table-3: F Statistics-Impact of GEC on Profitability

Model	Particular	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19710503.322	1	19710503.322	20.703	.000 ^b
	Residual	16185380.466	17	952081.204		
	Total	35895883.788	18			

a. Dependent Variable: Remuneration of the Employee

b. Predictors: (Constant), Net Profit

In table-2, the F-statistic of (20.703), accompanied by a significance level of .000, indicates that the model is statistically significant. This indicates that Net Profit significantly influences Employee Remuneration and accounts for a large part of its variation.

Table-4: Regression Results-Impact of GEC on Profitability

Model	Particular	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	980.260	746.124		1.314	.206
	Net Profit	.279	.061	.741	4.550	.000



The regression analysis indicates that Net Profit significantly and positively impacts Employee Remuneration, with a coefficient of 0.279 ($p = .000$). The standardized beta value (0.741) interprets a strong effect, whereas the constant term is not statistically significant

Table-5: Model Fitness-Impact of STC on Profitability

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.665 ^a	.442	.409		157.37265

The model shows a moderate correlation ($R = 0.665$) and accounts for 44.2% of the variability in profitability. The adjusted R^2 of 0.409 suggests a fairly good fit, providing reasonable prediction precision.

Table-6: F Statistics-Impact of STC on Profitability

Model	Particular	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	333053.233	1	333053.233	13.448	.002 ^b
	Residual	421024.551	17	24766.150		
	Total	754077.784	18			

a. Dependent Variable: Training Cost of the Employee

b. Predictors: (Constant), Net Profit

The F-statistic (13.448), with a p-value of .002, indicates that the model is statistically significant. This interoperates that Net Profit significantly influences Training Cost and accounts for a considerable part of the variation in employee training expenses.

Table-7: Regression Results-Impact of STC on Profitability

Model	Particular	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	299.899	120.338		2.492	.023
	Net Profit	.036	.010	.665	3.667	.002

In table-3, the regression analysis shows that Net Profit positively and significantly affects Training Cost, with a coefficient of 0.036 ($p = .002$). The standardized beta of 0.665 indicates a strong effect, and the constant term is also statistically significant.

Objective No.2: To determine the relationship between the earnings per share and average no of employees in the company

Table-8: Model Fitness-Impact of EPS on number of Employee

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.389 ^a	.151	.102		.0524871

a. Predictors: (Constant), Earnings per Share

The model indicates a modest correlation ($R = 0.389$) between Earnings per Share and the average employee count. It accounts for just 15.1% of the variability, suggesting limited effectiveness in prediction.

Table-9: F Statistics-Impact of EPS on number of Employee

Model	Particular	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.008	1	.008	3.035	.100 ^b
	Residual	.047	17	.003		
	Total	.055	18			



- a. Dependent Variable: Average Number of Employee
- b. Predictors: (Constant), Earnings Per Share

The F-statistic of 3.035, accompanied by a significance level of 0.100, indicates that the model is not statistically significant. Consequently, Earnings per Share do not have a meaningful or dependable effect on the average number of employees within the company.

Table-10: Regression Results-Impact of EPS on number of Employee

Model	Particular	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.473	.087		51.617	.000
	Earnings Per Share	-.010	.006	-.389	-1.742	.100

- a. Dependent Variable: Average Number of Employee

The regression analysis in tabale-3 indicates that Earnings Per Share (EPS) has a slight negative impact on the average number of employees, with a coefficient of -0.010 , although this effect is not statistically significant ($p = .100$). The constant term is significant, suggesting that the overall employee count is not significantly influenced by fluctuations in EPS.

Challenges and Limitations in Measuring and Reporting Human Resource Value in NTPC Company

Human resource accounting is the process of identifying, measuring and reporting of human resource in accounting terms in the form of human values in company's financial analysis. The financial value of an organization, instead of treating employees as an expense, it should treat it as its productive assets by quantifying the cost of living, training and developing and reporting this value on financial statement for strategic managerial decisions which can contribute to the company's overall value.

HRA provides data to management for decision making support and report preparing figures in financial terms. HRA also helps in efficiency monitoring and better risk management. The important Challenges and Limitations in Measuring and Reporting Human Resource Value in NTPC Company are given below:

- a. **Lack of Standardized Human Resource Accounting (HRA) Methods:** NTPC, similar to many other Indian public sector firms, does not adopt a standardized approach for human resource accounting, resulting in inconsistent valuation and reporting of human assets.
- b. **Challenges in Measuring Employee Skills and Experience:** NTPC's workforce possesses a wide range of technical and managerial abilities that are difficult to translate into monetary value, leading to subjective assessments.
- c. **Absence of Regulatory Mandate:** Because Indian accounting standards do not mandate HR valuation, NTPC omits the value of its human resources from its financial statements, resulting in limited formal disclosure.
- d. **Complexity of Measuring Productivity Contribution:** Measuring individual employee contributions, particularly in power generation and project management, is challenging because of the collaborative nature of team-based work.
- e. **Employee Turnover and Transferability Challenges:** At NTPC, the movement of employees between projects and units complicates the ability to accurately evaluate their long-term contributions.
- f. **Challenges in Assessing Intangible Qualities:** Key aspects such as leadership, innovation, teamwork, and safety culture essential to NTPC's operations are intangible and cannot be accurately evaluated using conventional accounting methods.
- g. **Resistance to Change in Traditional Reporting Practices:** Resistance to Change in Conventional Reporting Methods: As a large government-owned organization, NTPC adheres to conservative accounting standards, which results in a gradual adoption of new HR valuation systems.



- h. **Uncertainty in Future Benefits from Human Resources:** Estimating future economic gains from employees involves assumptions regarding their performance, career advancement, and retention, which may not always be accurate for decision making.
- i. **Challenges in Measuring the Impact of Training and Development Expenses:** Although NTPC allocates significant resources to training, assessing the return on these investments and connecting them to individual performance is difficult.
- j. **Variation in Employee Categories:** NTPC employs a diverse range of employees, including engineers, technicians, managers, apprentices, and contract workers. Treating all these categories equally in terms of valuation is very challenging.

Thus, it can be said that assessing and communicating the value of human resources at NTPC is difficult because there are no standardized approaches, valuing skills is complex, and current methods rely on conventional accounting techniques. The variety of employee types, intangible attributes, and unpredictable future advantages make precise HR valuation challenging, which in turn impacts sound decision-making and financial reporting.

7. FINDINGS:

The main findings are given below:

- a. The regression analysis reveals a significant positive correlation between Net Profit and GEC ($R = 0.741$; $p = .000$), which indicates that increased profitability is linked to higher employee remuneration costs.
- b. A strong positive relationship exists between Net Profit and Training Cost ($R = 0.665$; $p = .002$), indicating that better financial performance by the company is associated with increased investment in employee training and development.
- c. Human resource investments play a significant role in NTPC's financial results, with GEC accounting for 54.9% and STC for 44.2% of the variation in profitability.
- d. The model exhibits a low correlation ($R = 0.389$) and is not statistically significant ($p = .100$), implying that variations in EPS do not affect the company's staffing levels.
- e. While the regression coefficient for EPS is negative (-0.010), it is not statistically significant, indicating that changes in shareholder returns do not influence decisions about workforce size.

8. CONCLUSIONS AND SUGGESTIONS:

The study emphasizes that assessing and reporting the value of human resources at NTPC is a complex and ongoing challenge, mainly due to the lack of standardized Human Resource Accounting (HRA) practices, difficulties in assigning value to diverse employee skills, and the absence of regulatory mandates. Additionally, intangible attributes like leadership, safety culture, and innovation make accurate valuation even more difficult. Despite these challenges, the findings clearly exhibit that investments in human resources have a significant positive impact on NTPC's financial results. Specifically, higher Gross Employee Cost (GEC) and Staff Training Cost (STC) are strongly linked to increased net profit, indicating that spending on employee development and compensation enhances organizational performance. In contrast, the connection between Earnings per Share (EPS) and the number of employees is weak and not statistically significant, implying that workforce size decisions are not primarily influenced by shareholder returns. Overall, the study concludes that strategic human resource investments are vital for NTPC's profitability, even though precise valuation and reporting methods are still limited. The important four suggestions based on the study are given below:

- a. **Adopt a Standardized HRA Framework:** NTPC should establish a standardized Human Resource Accounting framework to consistently assess and report the value of its employees, facilitating improved comparison and informed decision-making.
- b. **Enhance Evaluation of Training Results:** The organization should establish structured approaches to measure the effectiveness of training initiatives, including productivity metrics and skill assessment tools, to connect training efforts with overall performance.
- c. **Integrate Intangible HR Metrics:** NTPC should include intangible HR metrics such as leadership, innovation, teamwork, and safety culture in its performance assessment processes to better reflect the true value of its workforce for financial reporting purpose.



- d. **Increase Transparency in HR Reporting:** By voluntarily sharing information about HR investments, employee development efforts, and key human capital metrics in annual reports, organizations can improve stakeholder awareness and facilitate better strategic decision-making.

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