Human Capital Valuation and Financial Performance: A Comprehensive Analysis across selected Corporations of India

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Abstract: This research conducts a comprehensive analysis of human capital valuation and financial performance across selected corporations in India, focusing on HPCL, ONGC, and BPCL over the period 2012 to 2022. Employing a quantitative research design, the study utilizes a cross-sectional approach, drawing insights from annual reports. Key objectives include providing descriptive statistics, investigating differences, examining relationships, and assessing the collective influence of specific factors on financial metrics. Data analysis involves descriptive statistics, ANOVA, correlation analysis, and regression analysis. The findings reveal substantial variations, significant differences, and meaningful correlations, emphasizing the interplay between human capital and financial metrics.

Index Terms -**Human Capital Valuation, Financial Performance, Corporate Analysis, India**

1.1 Introduction:

In the ever-evolving corporate environment of India, the interplay between human capital and financial metrics significantly influences organizational performance. Human capital, comprising the collective knowledge, skills, and abilities of a workforce, stands recognized as a pivotal factor in driving financial success. In today's fiercely competitive global market, businesses increasingly lean on their employees to drive innovation, create value, and fuel overall growth. Nonetheless, accurately measuring and valuing human capital remains a complex task, with numerous businesses struggling to establish a clear link between human capital and financial performance.

1.2 Litereture review:

Identifying a research gap is a crucial aspect of academic writing, and it involves pinpointing areas within existing literature where further investigation is needed. In the context of the provided references, the research gaps could be formulated as follows:

(Chernov, 2023)[2] draft an article **"Human capital: Valuation and management".** Which explores how to assess human capital using a value-oriented corporate management approach. It uses various methods, including economic analysis and quantitative evaluation, to determine the value of human capital. The research introduces a specific measure for human capital and provides quantitative assessments for individual human capital and its goodwill. It proposes a universal method that combines different approaches for a thorough evaluation, the study also shows the link between the goodwill of individual human capital and the overall enterprise, making it valuable for those involved in business valuation and corporate management research.

(Sharma, 2020)[5] conducted research on **"human capital value added (HCVA) by listed firms in India: evidence from S&P BSE 100 companies"** The study explores the role of human capital in organizational success, focusing on S&P BSE 100 listed firms in India. It aims to estimate Human Capital Value Added (HCVA) and analyze employee expense components for 76 sample firms across twenty-nine industries. Key findings include an average HCVA of ₹2.88 per employee (excluding outliers) and ₹7.80 overall. Positive HCVA growth is observed in half of the industries, with a significant increase in FY 2018-19. Financial service activities lead in HCVA (₹145.71), while manufacturing of wearing apparel (₹0.33) and civil engineering (₹0.35) show the lowest HCVA.

(Vyas, 2021)[6] in her research on **"An Empirical Analysis of Human Resource Accounting in Hindustan Petroleum Corporation Limited"** In this study, the researcher examined several human resource accounting variables utilizing statistical tools such as mean, standard deviation, trend analysis, and correlation statistics. The investigation encompassed data spanning from the fiscal year 2015-16 to 2019-20, revealing notable correlations, with the highest correlation observed among the selected human resource accounting variables.

The research lacks an in-depth analysis of human capital valuation and financial performance in Indian corporations like HPCL, ONGC, and BPCL from 2012 to 2022. Existing studies touch on related aspects but fail to explore the intricate relationships and

variations in this specific corporate context. This research aims to address this gap by using advanced statistical methods to examine the interplay between human capital and financial metrics in these selected entities.

1.3 Objectives:

Ro1: To provide a comprehensive overview of the key descriptive statistics for the selected variables

Ro2: To investigate significant differences in human capital and financial metrics

Ro3: To analysis is to examine the relationships between various human capital and financial metrics

Ro4: To assess the collective influence of the number of employees, managerial remuneration, and employee cost on the variation in EPS & Net Profit Margin

1.4 Research Design:

1.4.1 Type: The study employed a quantitative research design to meticulously analyze and quantify the intricate relationships between human capital and financial metrics within selected corporations in India.

1.4.2 Nature: A cross-sectional study unfolded, drawing insights from annual reports spanning the years 2012 to 2022.

1.4.3 Population and Sample: The population encompassed all corporations in India, while the study zeroed in on three specific entities: HPCL, ONGC, and BPCL, chosen strategically through a purposive sampling technique to ensure representation across the diverse Indian corporate landscape.

1.4.4 Data Collection: Data were extracted from the annual reports of the selected corporations, serving as a robust secondary data source.

1.4.5 Research Tools: Statistical analysis was executed using advanced tools such as SPSS and Excel, ensuring accuracy and reliability in data interpretation.

1.4.6 Variables: The study examined the following key variables: Number of Employees, Employee Costs, Managerial Remuneration, Enterprise Value, Basic EPS (Rs.), and Net Profit Margin (%).

1.4.7 Data Analysis Techniques: The research employed Descriptive Statistics, ANOVA Analysis, Correlation Analysis, and Regression Analysis for comprehensive data examination.

1.5 Data Analysis:

1.5.1 Descriptive Statistics:

Table 1.5.1 Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Years	30	1	10	6	3
Companies	30	1	3	2	1
Numbers of employee	30	8594	38318	21186	11096
Managerial remuneration	30	5240000	74947825	41625094	16194461
Employee Cost	30	3934800000	158520740000	60926720333	49382066272
Enterprise Value	30	39078	261866	119161	75247
Basic EPS	30	8.94	114.07	42	28
Net Profit Margin	30	.43	36.5	9	11
Valid N (listwise)	30				

1.5.1 Interpretation:

This study provides a concise overview of key financial and human resource metrics for HPCL, ONGC, and BPCL from 2012 to 2022. Notably, workforce size varies significantly (8,594 to 38,318), reflecting diverse human capital dynamics. Managerial remuneration shows wide-ranging executive compensation strategies. Employee cost ranges from 3,934,800,000 to 158,520,740,000, indicating varied expenditure on human resources. Enterprise value varies from 39,078 to 261,866, while basic EPS ranges from 8.94 to 114.07. Net profit margin (%) shows diverse profitability (0.43 to 36.53).

1.5.2 ANOVA:

H_{01}: There is no significant difference in financial metrics and human capital metrics during the selected years from 2012 to 2022 in the selected corporations of India.

Ha_1: There is a significant difference in either financial metrics, human capital metrics, or both, during the selected years from 2012 to 2022 in the selected corporations of India.

Table: 1.5.2 ANOVA		
	F	Sig.
Numbers of employee	17.2570	0.0000
Managerial remuneration	2.9550	0.0690
Employee Cost	98.7020	0.0000
Enterprise Value (Cr.)	50.1630	0.0000
Basic EPS (Rs.)	7.1650	0.0030
Net Profit Margin (%)	99.3700	0.0000

1.5.2 Interpretation:

The analysis of variance (ANOVA) results reveals significant differences in several key financial metrics among the selected corporations. The number of employees, employee cost, enterprise value (Cr.), basic EPS (Rs.), and net profit margin (%) all exhibit statistically significant variations ($p < 0.05$), suggesting to reject null hypothesis (H_{01}) which diverse performance across the observed years. This implies that these variables play a substantial role in shaping the financial landscape of the corporations. However, managerial remuneration does not show a statistically significant difference ($p > 0.05$), indicating accepting null hypothesis (H_{01}) which shows potential uniformity in the impact of executive compensation on the financial metrics considered. These findings underscore the importance of human capital and cost-related factors in influencing the financial performance of the studied corporations.

1.5.3 Correlation Analysis:

H_{02}: There is no significant correlation between various human capital and financial metrics

Ha_2: There is a significant correlation between various human capital and financial metrics

Table:1.5.3 Correlations						
		EV	EPS	EC	NpM	MR
EV	Pearson Correlation	1	-.521**	.783**	.916**	0.211
	Sig. (2-tailed)		0.003	0	0	0.263
	N	30	30	30	30	30
EPS	Pearson Correlation	-.521**	1	-.562**	-.457*	-0.298
	Sig. (2-tailed)	0.003		0.001	0.011	0.11
	N	30	30	30	30	30
EC	Pearson Correlation	.783**	-.562**	1	.890**	.462*
	Sig. (2-tailed)	0	0.001		0	0.01
	N	30	30	30	30	30
NpM	Pearson Correlation	.916**	-.457*	.890**	1	0.255
	Sig. (2-tailed)	0	0.011	0		0.174
	N	30	30	30	30	30
MR	Pearson Correlation	0.211	-0.298	.462*	0.255	1
	Sig. (2-tailed)	0.263	0.11	0.01	0.174	
	N	30	30	30	30	30
** Correlation is significant at the 0.01 level (2-tailed).						
* Correlation is significant at the 0.05 level (2-tailed).						

1.5.3 Interpretation:

The correlation analysis uncovers meaningful associations among essential variables. A robust negative correlation exists between Enterprise Value and Basic EPS, implying a potential trade-off. Employee Cost shows a positive correlation with both Enterprise Value and Net Profit Margin, highlighting its influence on financial performance. The correlation involving Managerial Remuneration and other variables is relatively faint, indicating a less conspicuous impact. Consequently, the null hypothesis (Ho2) is refuted, and the conclusion is drawn that there are noteworthy correlations between diverse human capital and financial metrics.

1.5.4 Regression Analysis:

Ho3: There is no significant impact of the number of employees, managerial remuneration, and employee cost on Basic EPS (Rs.) and Net Profit Margin (%).

Ha3: There is a significant impact of at least one of these factors on Basic EPS (Rs.) and Net Profit Margin (%).

Table: 1.5.4.1 Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
EPS	.688a	0.47	0.41	21.58
NpM	.907a	0.82	0.80	4.68

1.5.4.1 Interpretation:

The model, with predictors (Numbers of employee, Managerial remuneration, and Employee Cost), moderately explains 47% of the Basic EPS (Rs.) variance (R Square = 0.47) but has room for improvement (standard error = 21.58). For Net Profit Margin (%), the model, utilizing the same predictors, strongly fits with an R Square of 0.82, explaining 82% of the variability, and boasts a low standard error (4.68), indicating precise predictions.

Table: 1.5.4.2 ANOVA						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
EPS	Regression	10860.84	3	3620.28	7.77	.001b
	Residual	12112.58	26	465.87		
	Total	22973.42	29			
NpM	Regression	2661.4	3	887.13	40.43	.000b
	Residual	570.5	26	21.94		
	Total	3231.9	29			

1.5.4.2 Interpretation:

ANOVA results for Basic EPS (Rs.) show statistical significance (p < 0.05), indicating an impactful predictor among Numbers of employee, Managerial remuneration, and Employee Cost. The model explains variance in Basic EPS, evident from the F-statistic of 7.77. For Net Profit Margin (%), ANOVA results are highly significant (p < 0.05), signifying an impactful predictor. The model effectively explains variance, supported by a substantial F-statistic of 40.43. Therefore, based on the given information, the null hypothesis (Ho3) is likely rejected, implying a significant impact of at least one of the factors (Numbers of employee, Managerial remuneration, and Employee Cost) on both Basic EPS (Rs.) and Net Profit Margin (%).

Table: 1.5.4.3 Coefficients						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
EPS	(Constant)	93.32	15.326		6.089	0
	Managerial remuneration	0.00	0	-0.255	-1.442	0.161
	Employee Cost	0.00	0	-0.105	-0.47	0.643
	Numbers of employee	0.00	0.001	-0.551	-2.767	0.01

NpM	(Constant)	1.46	3.33		.438	.665
	Managerial remuneration	0.00	0.00	-.188	-1.84	.077
	Employee Cost	0.00	0.00	.960	7.40	.000
	Numbers of employee	0.00	0.00	.027	.236	.815

1.5.4.3 Interpretation:

Basic EPS $=93.32-0.551\times$Numbers of employee$-0.255\times$Managerial remuneration$-0.105\times$Employee Cost

For Basic EPS (Rs.), the model suggests a positive intercept effect (93.32), but Managerial remuneration, Employee Cost, and Numbers of employee have non-significant impacts on Basic EPS (Rs.) with p-values of 0.161, 0.643, and 0.01, respectively. The negative beta values for Managerial remuneration and Employee Cost imply potential negative impacts, while the negative beta for Numbers of employee indicates a negative association with Basic EPS.

Net Profit Margin $=1.46+0.027\times$Numbers of employee$-0.188\times$Managerial remuneration$+0.960\times$Employee Cost

For Net Profit Margin (%), the intercept (1.46) has a non-significant positive effect. Managerial remuneration shows a non-significant negative impact (beta = -0.188, p = 0.077), suggesting a potential decrease, while Employee Cost has a highly significant positive effect (beta = 0.960, p = 0.000), indicating a substantial positive impact on Net Profit Margin (%). Numbers of employee have a non-significant positive effect, suggesting a negligible impact on Net Profit Margin (%).

1.6 Results:

Objectives	Hypotheses	Findings
Ro1: To provide a comprehensive overview of the key descriptive statistics for the selected variables		Descriptive statistics reveal substantial variations in human resource and financial metrics among HPCL, ONGC, and BPCL during 2012 to 2022
Ro2: To investigate significant differences in human capital and financial metrics	Ha1: Significant differences exist	ANOVA results indicate significant variations in the number of employees, employee cost, enterprise value, basic EPS, and net profit margin (%).
Ro3: To analysis is to examine the relationships between various human capital and financial metrics	Ha2: significant correlations between metrics	This affirms meaningful connections between human capital and financial metrics.
Ro4: To assess the collective influence of the number of employees, managerial remuneration, and employee cost on the variation in EPS & Net Profit Margin (%)	Ha3: significant impact of factors on metrics	Basic EPS are statistically significant (p < 0.05), indicating that at least one of the predictors (Numbers of employee, Managerial remuneration, Employee Cost) has a significant impact on Basic EPS. Net Profit Margin (%) are also highly statistically significant (p < 0.05), suggesting that at least one of the predictors (Numbers of employee, Managerial remuneration, Employee Cost) significantly impacts Net Profit Margin.

1.7 Limitations:

This study is constrained by relying solely on secondary data from annual reports, potentially limiting the depth of information available. Its cross-sectional design may not fully capture long-term trends, and the focus on just three corporations—HPCL, ONGC, BPCL—might restrict generalizability to the broader corporate landscape. Furthermore, the quantitative approach employed may overlook qualitative nuances in human capital dynamics and financial performance.

1.8 Future Research:

Future studies can look at trends over a longer time. Adding more detailed insights about people and finances using different methods can be helpful. Studying a wider range of companies will give a better picture. Also, exploring how changes in the economy and rules affect these things could be interesting.

1.9 Discussion:

Digging into the dynamics of major Indian corporations (HPCL, ONGC, BPCL) from 2012 to 2022 reveals fascinating insights into the interplay between human capital and financial metrics. Notably, there are significant variations in the employees' size,

managerial compensation, and employee-related costs among these companies. Study establishes a clear link between these human capital factors and key financial metrics.

Exploring these relationships sheds light on intriguing patterns. For instance, as the enterprise value of a company increases, its basic earnings per share (EPS) and net profit margin tend to decrease, suggesting a nuanced trade-off. Furthermore, our analysis unveils significant correlations, such as the negative links between enterprise value (EV) and both basic EPS and net profit margin (NpM), indicating complex interactions. Conversely, positive correlations emerge between employee cost (EC) and both enterprise value and net profit margin, underlining the impact of human capital investments on financial performance.

However, it's essential to acknowledge the study's limitations. Focus on a specific set of companies and reliance on secondary data from annual reports may limit the generalizability of our findings. Future research should broaden the scope to encompass a more diverse corporate landscape and consider qualitative insights for a comprehensive understanding.

1.10 Conclusion:

In conclusion, this research enhances our comprehension of how human capital intricacies influence the financial dynamics of major Indian corporations. The observed variations and correlations emphasize the need for businesses to strategically manage their workforce and associated costs for optimal financial performance. While our study contributes valuable insights, the limitations highlight avenues for future research to delve deeper into this complex relationship. This work serves as a foundational exploration, paving the way for a more nuanced understanding of how human capital considerations can be seamlessly integrated into financial analyses for sustained business success.

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List of Abbreviations:

HPCL: Hindustan Petroleum Corporation of India

ONGC: Oil and Natural Gas Corporation

BPCL: Bharat Petroleum Corporation Limited

MR: Managerial Remuneration

EC: Employee Cost

NE: Number of Employees

NpM: Net Profit Margin

EPS: Earnings Per Share