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Human resource accounting in public sector undertakings: A case study on national thermal power corporation limited

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Abstract
This paper delves into the realm of Human Resource Accounting (HRA) within the context of a prominent public sector entity, the National Thermal Power Corporation Limited (NTPC), in India. NTPC stands as a pivotal player in India's energy landscape, boasting a diverse portfolio spanning fossil fuels, hydro, nuclear, and renewable energy sources. The study aims to furnish invaluable insights into the strategic management of human resources, offering a comprehensive analysis of their acquisition, development, and maintenance vis-à-vis organizational objectives. Through a meticulous examination of HRA practices, the research endeavors to facilitate effective decision-making, monitoring, and evaluation of human assets within NTPC. Moreover, it sheds light on the financial implications of various HR practices, aiding in the formulation of management principles and future-oriented decision-making. Anchored in a robust research methodology, this study presents a holistic exploration of HRA dynamics, drawing upon pertinent literature and real-world observations. Ultimately, the findings contribute to the enrichment of HR management strategies, bolstering organizational performance and fostering sustainable industrial development.

Keywords: Human resource accounting, public sector undertakings, national thermal power corporation limited (NTPC), organizational effectiveness strategic management, cost value information, financial management, human asset analysis, industrial development

Introduction
NTPC is India’s largest energy conglomerate with roots planted way back in 1975 to accelerate power development in India. Since then, it has established itself as the dominant power major with a presence in the entire value chain of the power generation business. Fossil fuels have forayed into generating electricity via hydro, nuclear and renewable energy sources. This foray will play a significant role in lowering its carbon footprint by reducing greenhouse gas emissions. To strengthen its core business, the corporation has diversified into consultancy, power trading, training of power professionals, rural electrification, ash utilization, and coal mining. NTPC became a Maharatna company in May 2010, one of the only four companies to be awarded this status. NTPC ranked 2nd in ‘2019, Forbes Global 2000 ranking of the World’s most significant companies.

The company's total installed capacity is 55,786 MW (including JVs) with 21 coals based, seven gas-based stations, and 2 Hydro based stations and 1 Wind based station. 10 Joint Venture stations are coal-based, and 11 Solar PV projects. The capacity will have a diversified fuel mix, and by 2032, non-fossil fuel-based generation capacity shall make up nearly 30% of NTPC's portfolio.

NTPC has been operating its plants at high-efficiency levels. Although the company has 15.56% of the total national capacity, it contributes 22.74% of total power generation due to its focus on high efficiency.

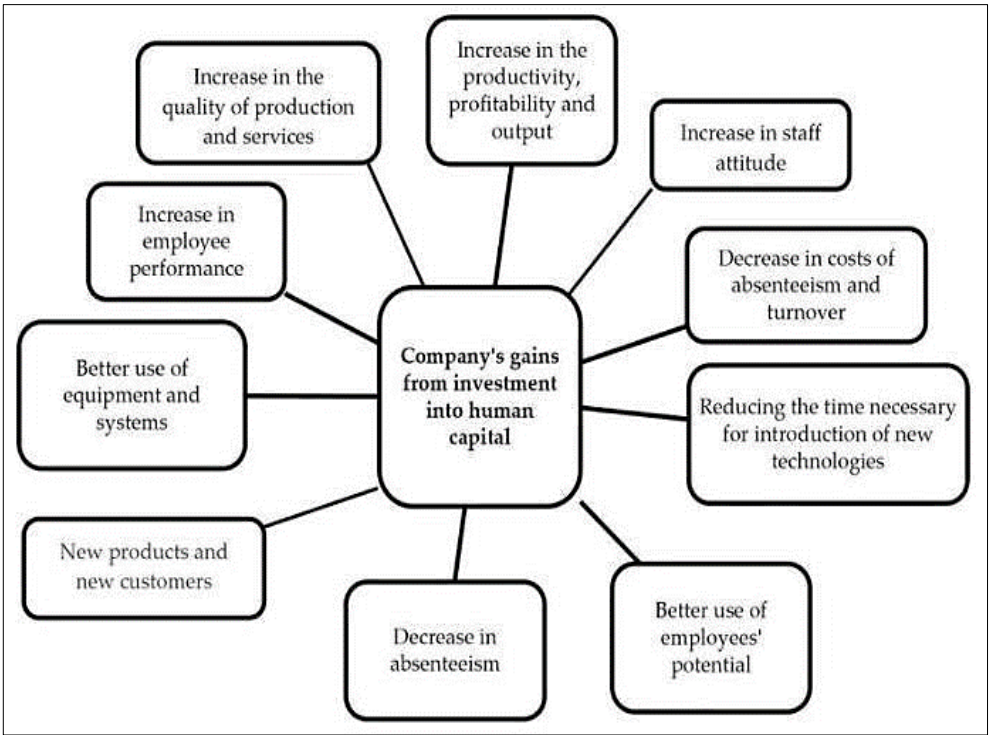

Fig 1: Schematic diagram of HR investment

Public Sector Undertakings Policy & Organization

When India achieved independence in 1947, it was primarily an agrarian entity, with a weak industrial base. There were only eighteen state owned Indian Ordnance Factories, previously established to reduce the dependency of the British Indian Army on imported arms [2].

The British Raj had previously elected to leave agricultural production to the Private sector, with tea processing firms, Jute mills (such as the Acland Mill), railways, electricity utilities, banks, coal mines, and steel mills being just some of the economic entities largely owned by private individuals like the industrialist Jamsetji Tata. Other entities were listed on the Bombay Stock Exchange [3].

Critics of private ownership of India's agricultural and industrial entities-most notably Mahatma Gandhi's independence movement-instead advocated for a self-sufficient, largely agrarian, communal village-based existence for India in the first half of the 20th century [4, 5]. Other contemporary criticisms of India's public sector targeted the lack of well-funded schools, public libraries, universities, hospitals and medical and engineering colleges; a lack seen as impeding an Indian replication of Britain's own industrialization in the previous century.

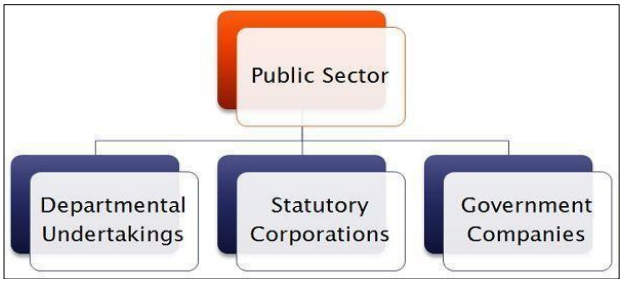

Fig 2.1: Public Sector

Financial Management in NTPC

Financial management is the business function concerned with profitability, expenses, cash and credit, so that the "organization may have the means to carry out its objective as satisfactorily as possible;" the latter often defined as maximizing the value of the firm for stockholders.

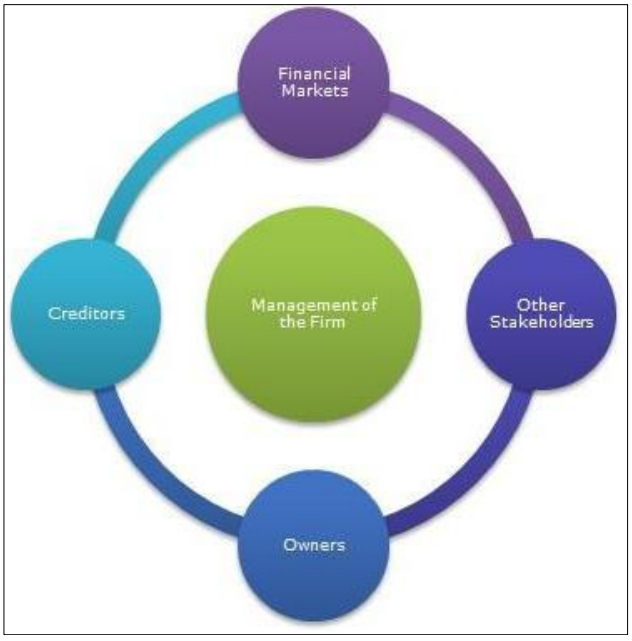

Fig 2.2: Financial management

Literature Reviewed on Rana Dasgupta

1. B Shyam, P Kanakasabapathy, "Feasibility of Floating Solar Pv Integrated pumped storage system for a grid-connected microgrid under static time of day tariff environment: A Case Study from India" Renewable Energy, 2022.

Economic savings of floating solar PV resulted in a levelized cost of 0.8518₹/kWh, and the availability of existing cascaded reservoirs brought on a levelized cost of 4.2713₹/kWh for stored energy. Compared to the grid-alone

system, the proposed system reduced the daily operating cost and loss of load probability. The proposed system performs economically in a subsidized static tariff environment.

2. Venkatesh Boddapati, Avinash Sree Ram Nandikatti, "Salient Features of The National Power Grid and Its Management During an Emergency: A Case Study in India "Energy for Sustainable Development, 2020

This paper analyzes the effects of the 9-min pan-India voluntary lights-off policy that was planned and executed by the Government of India in April 2020 on the National Grid and the steps that were taken to maintain grid stability during the event. The policy was a symbolic gesture of public solidarity with frontline healthcare and emergency workers in the nation's war against the COVID-19 pandemic. The event entailed nationwide switching-off of electric lights and lighting of earthen lamps or switching-on of torch lights. This 9-min event posed a significant challenge to the country's power systems engineers in managing grid stability during the large-scale load reduction, and meticulous planning and implementation of protective measures were carried out. In this article, the strategy implemented by the Indian power sector to manage the grid during the nine-minute event is described. The variations of grid parameters such as frequency, voltage, and load at all dispatch centers before, during, and after the nine-minutes are analyzed, and the generation schedule that was followed is also presented, along with real-time results. This case study provides an overview of power systems management that involves strategic scheduling of generators throughout the country to tackle sudden and mass-reductions of load on the power system.

3. JS. Baral N, Kaustub Singh, Prabudh Sharma, "The potential of sustainable algal biofuel production using CO2 from thermal power plant in India" Renewable and Sustainable Energy Reviews, 2015.

Thermal power plants in India emit around 500 Mt of CO2 annually. All of it is released into the atmosphere untreated. Microalgae, a third-generation feedstock for bio-fuel emerges as a viable option for partly sequestering the emissions. Moreover, its carbon capture capacity of 4.8 kg CO2/kg biomass, which is very much as compared to terrestrial substitutes like Jhatropa curcas, enables to produce bio fuel hence adding value to the entire process. This paper intends to build upon this idea and come up with strategies to integrate bio fuel production and CO2 sequestration with the existing thermal power plants. The raw materials needed for algal growth are available in the plant as elaborated in the paper. Thus, the bio fuel produced can be routed back to power the plant consequently lowering the dependence on coal. This would help in putting a check on the carbon emissions thus making the existing systems more environmentally benign and suitable for long haul. This paper reviews currently employed carbon capture technologies and methods and comes up with a strategy to subsume carbon capture through microalgae with power plants of a certain capacity. 3 t/day is taken as the basis for calculations in the proposed flow sheet. An alternative of the above is also provided which substitutes the biofuel production with co-firing. This escalates the nitrogen content of flue gas but deescalates the investment. This brings down the capital investment in the plant but enhances N2 content of flue gas. Carbon leakage is accounted for in a table of atomic balance. It takes care of input and output of carbon. The paper is inclined towards the conclusion that the Microalgae possess incredible potential and if tapped efficaciously could prove to be extremely helpful in these days of power and environmental crisis.

4. Bhanage Vinayak, Han Soo Lee, Shirishkumar Gedam, R. Latha, "Impacts of Future Urbanization on Urban Microclimate and Thermal Comfort Over the Mumbai Metropolitan Region, India" Sustainable Cities and Society, 2022

In the context of thermal discomfort, an additional 20% of the total area can undergo hyperthermal treatment by 2050. This study reveals that although the implemented mitigation strategy can restrict the increasing temperature, it is ineffectual in minimizing the thermal discomfort level. The results of this study will be helpful in designing area-specific climate action plans through which goals of sustainable urban development can be accomplished.

5. Brijesh Kumar Vyas, Ambuj Adhwaryu, Kalyan Bhaskar, "Planning and developing large solar power plants: A case study of 750 Mw Rewa Solar Park in India" Cleaner Engineering and Technology, 2022.

India introduced a national solar mission in 2009 with initial target of achieving 20 GW of solar installations by 2022. In 2014, the target was revised to 100 GW and a solar park scheme was launched to promote large solar power projects. The planning for Rewa Ultra Mega Solar (RUMS) Park, the largest grid connected solar power plant the time in India, began in 2014 and the full commercial generation started in 2020. At a levelized tariff of Rs 3.30 (~USD 0.04) per unit for 25 years, it is one of the cheapest solar power producing plants in the world. In this paper we describe in detail the planning and development of RUMS park, review the common risks associated with large renewable projects and specifically analyze ways in which RUMS Park has tried to mitigate those risks. Insights are useful for designing policies and planning for large solar projects in India and elsewhere.

Objective

- To furnish cost value information for making proper and effective management decision about acquiring, developing and maintaining human resources in order to achieve cost effective organizational objective.
- To monitor effectively the use of human resources by the management.
- To have an analysis of the human asset, i.e. whether such assets are conserved, depleted or appreciated.
- To aid in the development of management principles and proper decision making for the future by classifying financial consequences of various practices.
- To attract and support investment in organization.
- To classifying revenue and capital nature expenditure of human resource assets.
- To focus on the role of work force on profitability, productivity of organization.

- Rapid Industrial Development: The industrial policy of the Government of India is aimed at increasing the tempo of industrial development. It seeks to create a favorable investment climate for the private sector as well as mobilize resources for the investment in public sector. In its way the government seeks to promote rapid industrial development in the country.
- Balanced industrial Structure:
- Advertisements: The industrial policy is designed to correct the prevailing lopsided industrial structure. Thus, for example, before independence, India had some fairly developed consumer goods industries. But the capital goods sector was not developed at all and basic and heavy industries were by and large absent. So, the industrial policy had to be framed in such a manner that these imbalances in the industrial structure are corrected. Thus, by laying emphasis on heavy industries and development of capital goods sector, industrial policy seeks to bring a balance in industrial structure.

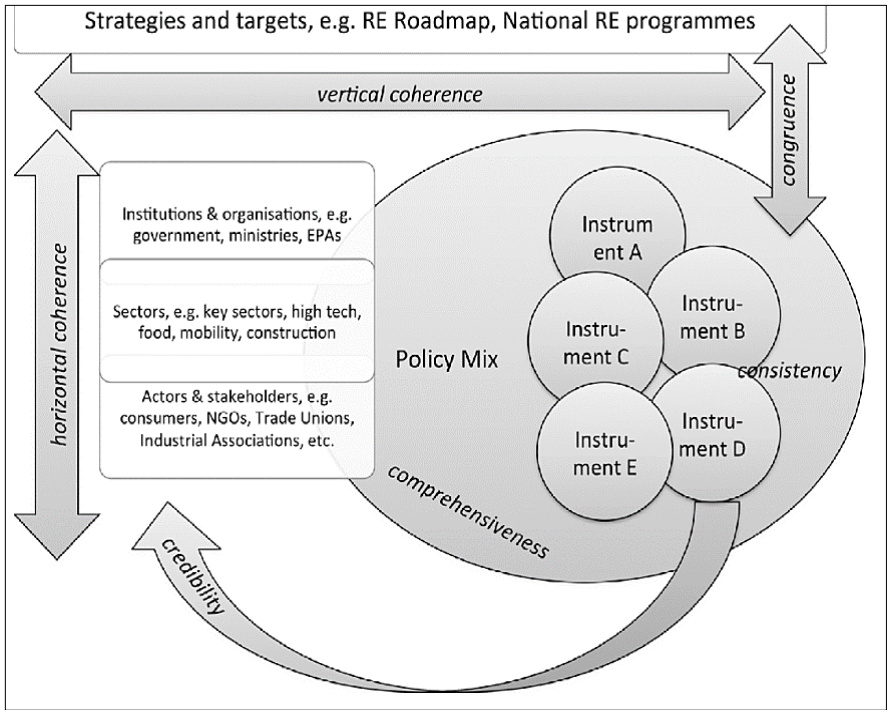

Fig 2.3: Strategies and Targets

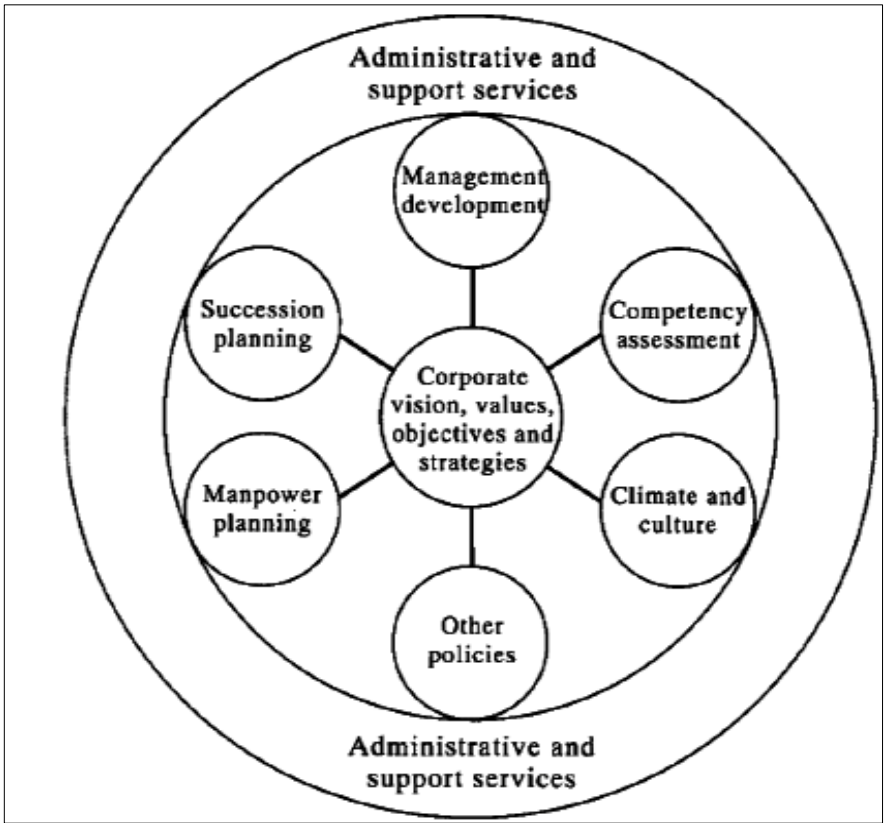

Fig 2.4: Administrative and Supports Services

Research Methodology

Research Design

The study adopts a qualitative research approach to conduct an in-depth investigation into the practices of Human Resource Accounting (HRA) within the context of the National Thermal Power Corporation Limited (NTPC).

Data Collection

Primary Data

Primary data collection involves the use of structured interviews, surveys, and observations. Interviews with key personnel within NTPC, such as HR managers and executives, are conducted to gather insights into HRA practices, strategic management of human resources, and organizational objectives.

Secondary Data

Secondary data is gathered from published literature, reports, and relevant documents related to HRA, public sector undertakings, financial management, and strategic management. This includes academic journals, government publications, and industry reports.

Sampling Strategy:

Population

The population for the study comprises employees, managers, and executives involved in human resource management and financial decision-making within NTPC.

Sample Selection

A purposive sampling technique is employed to select participants who possess relevant expertise and experience in HRA and organizational management within the public sector.

Data Analysis:

Qualitative Analysis

Thematic analysis is used to identify patterns, themes, and insights from the collected data. Data from interviews, surveys, and literature are systematically analyzed to uncover key findings related to HRA practices, organizational effectiveness, and strategic management within NTPC.

Financial Analysis

Financial data related to human resource expenditures, investments, and outcomes are analyzed to assess the impact of HR practices on organizational performance and financial management.

Ethical Considerations

Informed Consent

Prior consent is obtained from participants before conducting interviews or surveys.

Confidentiality

Measures are taken to ensure the confidentiality and anonymity of participants and sensitive organizational information.

Validity and Reliability

Validity

The validity of the research findings is ensured through triangulation, using multiple data sources and methods to corroborate findings.

Reliability

Reliability is established through the use of standardized data collection instruments and procedures, as well as rigorous data analysis techniques.

Limitations

Potential limitations of the study include access to proprietary organizational data, time constraints, and the subjective nature of qualitative research.

Conclusion

The research methodology outlined above aims to provide a rigorous and comprehensive investigation into HRA practices within NTPC, contributing valuable insights to the existing body of knowledge in the field of human resource management and organizational effectiveness.

This research methodology is designed to facilitate a thorough exploration of HRA dynamics within NTPC, ultimately enhancing understanding of HR management strategies and their implications for organizational performance and sustainable industrial development.

This provides the study on impact of technology on consumer buying behavior with special reference to tourism industry. For this purpose, a questionnaire survey is conducted on predetermined sample size of 300. The questionnaire was validity using ACP value and data collected through questionnaire survey is found as reliable using Cronbach's Alpha value. Based on the data collected from questionnaire survey, following illustrations were made:

In the questionnaire survey, there were 64(21.3%) respondents who have fully disagree with Organization's HR executives are fully aware of the business needs and strategies, there were 58(19.3%) respondents who have partially disagree with Organization's HR executives are fully aware of the business needs and strategies, there were 63(21.0%) respondents who have neither agree nor disagree with Organization's HR executives are fully aware of the business needs and strategies, there were 57(19.0%) respondents who have agree with Organization's HR executives are fully aware of the business needs and strategies and there were 58(19.3%) respondents who have fully agree with Organization's HR executives are fully aware of the business needs and strategies.

In the questionnaire survey, there were 59(19.7%) respondents who have fully disagree with Efforts are taken to generate awareness amongst the employees about the organization's financial position, customers' needs, quality of product/service, cost etc., there were 54(18.0%) respondents who have partially disagree with Efforts are taken to generate awareness amongst the employees about the organization's financial position, customers' needs, quality of product/service, cost etc., there were 68(22.7%) respondents who have neither agree nor disagree with Efforts are taken to generate awareness amongst the employees about the organization's financial position, customers' needs, quality of product/service, cost etc., there were 70(23.3%) respondents who have agree with Efforts are taken to generate awareness amongst the employees about the organization's financial position, customers' needs, quality of product/service, cost etc. and there were 49(16.3%) respondents who have fully agree with Efforts are taken to generate awareness amongst the employees about the organization's financial position, customers' needs, quality of product/service, cost etc..

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