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**IMPACT OF COVID-19 ON HR PRACTICES IN PUBLIC SECTOR  
UNDERTAKINGS: A CASE STUDY OF NTPC**

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**ABSTRACT**

The COVID-19 pandemic posed unprecedented challenges to organizational functioning, particularly in the management of human resources. Public Sector Undertakings (PSUs), which play a crucial role in India's economic stability and employment generation, were required to ensure continuity of essential services while safeguarding employee welfare. This study examines the impact of COVID-19 on Human Resource (HR) practices in NTPC, India's largest power generation PSU, through an empirical case study approach. The research focuses on key HR dimensions such as recruitment and onboarding, training and development, performance management, work scheduling, employee health and safety, digital HR initiatives, and welfare measures during the pandemic period. Primary data were collected from employees across different hierarchical levels using a structured questionnaire, supplemented by secondary data from NTPC reports, HR circulars, and government advisories. The findings reveal that COVID-19 significantly altered conventional HR practices, accelerating the adoption of digital platforms for training, communication, and performance monitoring. Health, safety, and employee well-being emerged as central priorities, with HR interventions playing a critical role in maintaining morale and productivity. However, challenges related to work-from-home implementation, performance appraisal, and contract workforce management were also evident. The study highlights the need for institutionalized crisis-responsive HR frameworks in PSUs to enhance organizational resilience and preparedness for future disruptions.

**KEYWORDS:** COVID-19, Human Resource Practices, Public Sector Undertakings, NTPC, Employee Welfare, Digital HR

## INTRODUCTION

The COVID-19 pandemic emerged as an unprecedented global crisis that disrupted economic activities, social systems, and organizational functioning across sectors. Unlike earlier economic downturns, the pandemic simultaneously affected supply chains, labor availability, workplace safety, and employee well-being, thereby posing multidimensional challenges to human resource management (HRM). Organizations were compelled to rapidly redesign their work processes, adopt digital platforms, and implement health and safety protocols, all while ensuring continuity of operations. In this context, HR departments assumed a strategic role, moving beyond routine administrative functions to become key agents of crisis management and organizational resilience.

In India, Public Sector Undertakings (PSUs) occupy a distinctive position in the national economy, contributing significantly to infrastructure development, employment generation, and delivery of essential services. PSUs are not only commercial entities but also instruments of socio-economic policy, expected to balance efficiency with social responsibility. During the COVID-19 pandemic, PSUs faced the dual challenge of maintaining critical services and safeguarding a large and diverse workforce under restrictive conditions such as lockdowns, mobility constraints, and health risks. Consequently, HR practices in PSUs required rapid adaptation in areas such as workforce deployment, shift management, occupational health, employee communication, and welfare support.

NTPC Limited, India's largest power generation company, represents a particularly relevant case for examining HR responses during the pandemic. As an organization responsible for uninterrupted power supply, NTPC was required to sustain round-the-clock operations even during periods of strict lockdown. This operational necessity intensified the importance of effective HR strategies related to employee safety, accommodation at project sites, mental health support, and contingency staffing. Simultaneously, administrative and support functions were required to transition to remote working modes, demanding swift adoption of digital HR systems for training, meetings, and performance monitoring. Thus, NTPC provides a suitable institutional setting to analyze how a large PSU managed human resources under crisis conditions.

Existing literature on COVID-19 and HR practices has largely focused on private sector organizations, multinational corporations, and service industries such as IT and healthcare.

While these studies offer valuable insights into remote work, employee engagement, and digital HR transformation, there is comparatively limited empirical research on PSUs, which operate under distinct regulatory frameworks, rigid service rules, and strong trade union presence. Moreover, PSUs employ a heterogeneous workforce comprising permanent employees, contractual workers, and outsourced staff, each facing different levels of job security and welfare coverage during crises. These institutional characteristics necessitate PSU-specific studies to understand how HR policies are designed and implemented in emergency situations.

The pandemic highlighted the growing importance of employee well-being, mental health support, and organizational communication as critical components of HR strategy. Traditional performance evaluation mechanisms, recruitment processes, and training models were disrupted, prompting organizations to experiment with online platforms and flexible work arrangements. However, the effectiveness and acceptance of such changes among employees, particularly in traditional public sector environments, remain underexplored. Understanding employee perceptions of HR interventions is essential for evaluating not only policy effectiveness but also organizational trust and morale during crises.

Against this backdrop, the present study aims to examine the impact of COVID-19 on HR practices in NTPC as a representative PSU. By analyzing changes across major HR functions and assessing employee experiences, the study seeks to contribute empirical evidence to the limited body of PSU-focused HR research during pandemics. The findings are expected to offer policy-relevant insights for strengthening crisis-responsive HR frameworks in PSUs and enhancing preparedness for future large-scale disruptions. In doing so, the study also contributes to broader discussions on public sector management, workforce governance, and institutional resilience in times of systemic crisis.

### **Background of COVID-19 and Its Impact on Workplaces**

The COVID-19 pandemic, caused by the novel coronavirus SARS-CoV-2, emerged in late 2019 and rapidly escalated into a global public health emergency. In March 2020, the World Health Organization declared COVID-19 a pandemic, prompting governments worldwide to impose stringent containment measures such as nationwide lockdowns, travel restrictions, social distancing norms, and workplace closures. These measures, though essential to control the spread of the virus, brought unprecedented disruption to economic activities and organizational functioning across sectors. Workplaces, traditionally designed around physical

presence and interpersonal interaction, were compelled to undergo abrupt and large-scale transformation.

The immediate impact of COVID-19 on workplaces was the suspension or severe restriction of on-site operations. Organizations were forced to adopt alternative work arrangements, including work-from-home (WFH), staggered shifts, and rotational staffing, often without prior preparedness or adequate digital infrastructure. This sudden transition challenged conventional management practices related to supervision, coordination, performance evaluation, and communication. Employees faced heightened uncertainty regarding job security, income stability, and career progression, while employers struggled to balance operational continuity with employee health and safety.

In addition to operational disruptions, the pandemic significantly affected the physical and psychological well-being of employees. Fear of infection, prolonged isolation, increased workloads for essential workers, and blurred boundaries between work and personal life contributed to elevated levels of stress, anxiety, and burnout. Organizations were compelled to introduce new workplace protocols, including sanitation measures, health screening, vaccination drives, and emergency medical support. At the same time, attention to mental health and emotional well-being emerged as a critical component of workplace management. The pandemic also accelerated the adoption of digital technologies in workplaces. Virtual meetings, online training, digital attendance systems, and e-HR platforms became central to organizational functioning. While these changes enabled continuity, they also exposed digital divides, skill gaps, and inequalities in access to technology. Overall, COVID-19 acted as a catalyst for rethinking workplace structures, employment relations, and management practices, fundamentally altering how work is organized and experienced in contemporary organizations.

### **Role of Human Resource Management (HRM) in Crisis Situations**

Human Resource Management (HRM) plays a critical role in enabling organizations to respond effectively to crisis situations such as pandemics, natural disasters, economic shocks, and security threats. In times of crisis, HR functions extend beyond routine administrative responsibilities to encompass strategic decision-making, workforce stabilization, and organizational resilience. HR departments act as a vital link between management and employees, ensuring that policies are rapidly adapted to changing conditions while safeguarding employee rights, well-being, and motivation.

One of the foremost responsibilities of HRM during crises is ensuring employee health and safety. This includes formulating and implementing workplace safety protocols, coordinating medical support, facilitating access to health services, and ensuring compliance with government regulations. HR also plays a key role in communicating accurate and timely information, reducing uncertainty and preventing misinformation. Transparent communication helps maintain employee trust and cooperation, which are essential for organizational stability during uncertain periods.

Workforce planning and deployment constitute another crucial area of HR intervention in crisis situations. HR managers must develop contingency plans for staff shortages, implement flexible work arrangements, and redesign job roles to ensure continuity of essential operations. This may involve shift restructuring, cross-training of employees, redeployment of personnel, and managing remote work systems. Such adaptive workforce strategies help organizations sustain productivity despite operational constraints.

Employee well-being and psychological support have increasingly become central to HR's crisis management role. Crises often generate high levels of stress, anxiety, and emotional strain among employees. HR-led initiatives such as counseling services, mental health awareness programs, and supportive supervisory practices contribute significantly to employee morale and engagement. Moreover, HR policies related to leave, compensation, and job security are critical in addressing employee vulnerability during emergencies.

HRM contributes to organizational learning and preparedness by evaluating crisis responses and institutionalizing best practices. Post-crisis assessments, training programs, and policy reforms enable organizations to build long-term resilience. Thus, HRM functions as both an operational and strategic pillar during crises, balancing immediate response needs with long-term organizational sustainability.

### **Importance of Public Sector Undertakings (PSUs) in India's Economy and Employment**

Public Sector Undertakings (PSUs) constitute a vital component of India's economic and institutional framework. Established with the objective of promoting industrial development, infrastructure creation, and balanced regional growth, PSUs play a strategic role in sectors such as energy, steel, coal, transportation, telecommunications, and heavy engineering. These enterprises are not merely profit-oriented entities but are also instruments of socio-economic policy, tasked with fulfilling national development goals, ensuring service delivery in critical sectors, and supporting economic stability during periods of crisis.

From an economic perspective, PSUs contribute significantly to India's Gross Domestic Product (GDP), capital formation, and export earnings. They are major investors in large-scale infrastructure projects, particularly in energy generation, petroleum, railways, and defense production. By operating in capital-intensive and high-risk sectors where private investment may be limited, PSUs help bridge critical development gaps. Moreover, many PSUs play a counter-cyclical role during economic downturns by sustaining investment and employment, thereby supporting macroeconomic stability.

In terms of employment, PSUs are among the largest organized-sector employers in the country. They provide direct employment to millions of workers across technical, managerial, and administrative categories, in addition to generating substantial indirect employment through contract labor, vendors, and ancillary industries. PSU jobs are generally associated with relatively stable income, social security benefits, pensions, healthcare facilities, and housing in industrial townships, contributing to social welfare and upward mobility, especially for employees from rural and semi-urban backgrounds.

PSUs also play a crucial role in skill development and human capital formation. Through in-house training institutes, apprenticeships, and collaboration with technical institutions, they contribute to building a skilled workforce for strategic industries. Furthermore, PSUs often implement inclusive employment policies, providing opportunities to marginalized sections through reservation policies and regional recruitment initiatives, thereby supporting social equity objectives.

Given their scale, stability, and public accountability, PSUs are central to India's employment structure and economic resilience. During crises such as the COVID-19 pandemic, their responsibility extends beyond commercial performance to ensuring continuity of essential services and protection of employee livelihoods, making effective HR management within PSUs particularly significant for national socio-economic stability.

### **Brief Profile of NTPC and Its Workforce Structure**

NTPC Limited is India's largest power generation company and a leading Public Sector Undertaking under the Ministry of Power, Government of India. Established in 1975, NTPC was created with the objective of accelerating power development in the country and ensuring reliable and affordable electricity supply. Over the decades, the company has expanded its operations across multiple states with a diversified portfolio that includes coal-based, gas-based, hydro, solar, and wind power projects. NTPC plays a crucial role in

supporting India's industrial growth, urbanization, and rural electrification initiatives, and it is recognized as a strategic enterprise in the national energy sector.

The workforce structure of NTPC is characterized by a multi-tier and diversified employment system. It comprises permanent executives, supervisors, and workmen, along with a substantial number of contract and outsourced workers engaged in operations, maintenance, security, housekeeping, and project construction activities. Permanent employees are governed by standardized service rules, structured career progression, and comprehensive welfare benefits, including healthcare, housing, and education facilities in township-based project locations. Contract workers, on the other hand, are generally employed through third-party agencies and often experience relatively lower job security and limited access to organizational welfare schemes.

NTPC places strong emphasis on training and skill development through its dedicated training institutes and continuous professional development programs. The organization traditionally follows centralized HR policies with decentralized implementation at project and regional levels. This complex workforce structure makes HR management at NTPC particularly challenging during crisis situations such as the COVID-19 pandemic, as policies must address the needs of heterogeneous employee groups while ensuring uninterrupted power generation operations.

NTPC Limited was selected as the case study organization for this research due to its strategic importance in India's power sector and its critical role in ensuring uninterrupted electricity supply, particularly during crisis situations such as the COVID-19 pandemic. As the largest power generation PSU in the country, NTPC operates large-scale thermal and renewable energy projects that require continuous, round-the-clock functioning. Unlike many organizations that could suspend or significantly scale down operations during lockdowns, NTPC was required to maintain essential services, making workforce management and employee safety especially critical.

From an HR perspective, NTPC offers a unique institutional setting to examine crisis-responsive HR practices within a public sector framework. The organization follows structured service rules, strong union presence, and centralized HR policies, which influence the flexibility and speed of policy implementation. Studying NTPC allows for an assessment of how traditional public sector HR systems adapt to emergency conditions that demand rapid decision-making, digital transformation, and flexible work arrangements.

Additionally, NTPC has a heterogeneous workforce comprising permanent employees, contract workers, and outsourced staff working across operational plants and administrative

offices. This diversity enables analysis of differential HR interventions and welfare coverage among various employee categories during the pandemic. The presence of township-based project sites also provides scope to study integrated welfare measures such as healthcare, accommodation, and community safety initiatives.

NTPC enhances the policy relevance of the study, as insights derived from a large and strategically significant PSU can inform HR preparedness frameworks across other public sector enterprises facing similar operational and social responsibilities during future crises.

## **Dimensions of HR Practices Examined**

### ***1. Recruitment and Onboarding***

During the COVID-19 pandemic, recruitment and onboarding processes were significantly disrupted due to lockdowns, travel restrictions, and social distancing norms. NTPC, like many PSUs, had to postpone physical recruitment drives, interviews, and verification procedures, leading to delays in filling critical positions. To address these challenges, digital platforms were increasingly used for online interviews, document verification, and preliminary induction programs. Onboarding of new recruits was redesigned with virtual orientation sessions and limited physical interaction at project sites. However, practical training and familiarization with plant operations remained challenging, affecting early-stage employee integration and productivity.

### ***2. Training and Development (Online Platforms)***

Training and development activities underwent rapid digital transformation during the pandemic. NTPC shifted many of its capacity-building programs to online learning platforms, webinars, and virtual workshops to ensure continuity of skill development. Technical training, safety modules, and managerial programs were delivered through e-learning systems, allowing employees to participate remotely. While online training increased accessibility and reduced travel costs, it posed limitations for hands-on technical learning essential in power plant operations. Variations in digital literacy and internet connectivity also affected participation levels. Nevertheless, the crisis accelerated the adoption of blended learning models within PSU training frameworks.

### ***3. Performance Appraisal and Productivity Monitoring***

Performance appraisal systems faced considerable challenges due to altered work arrangements and operational disruptions. Traditional evaluation mechanisms based on physical supervision and attendance became less relevant, particularly for employees working remotely. HR departments had to rely more on outcome-based assessment and digital

reporting tools to monitor productivity. In operational units, productivity was maintained through shift-based targets and supervisory oversight, while administrative roles depended on virtual coordination. Employees expressed concerns regarding fairness and transparency in evaluations under constrained working conditions. This period highlighted the need for more flexible, performance-oriented appraisal systems aligned with crisis contexts.

#### ***4. Work Scheduling and Remote Work***

Work scheduling became a critical HR function during the pandemic, especially in essential services like power generation. NTPC implemented staggered shifts, rotational duty rosters, and workforce segregation to reduce infection risk and ensure continuity of operations. For non-operational staff, work-from-home arrangements were introduced, supported by digital communication tools. While remote work improved safety and flexibility, it also created challenges related to coordination, work-life balance, and monitoring. For plant-based employees, extended duty hours and on-site accommodation were often necessary, raising concerns about fatigue and psychological stress among essential workers.

#### ***5. Health and Safety Protocols***

Employee health and safety became the top priority of HR management during COVID-19. NTPC implemented strict workplace safety measures, including regular sanitization, thermal screening, mandatory mask usage, social distancing at work sites, and controlled access to plant premises. Medical facilities were strengthened through testing arrangements, isolation wards, and tie-ups with hospitals. Vaccination drives were conducted for employees and, in some cases, for contract workers and family members within townships. These interventions played a crucial role in minimizing workplace transmission and maintaining employee confidence, although implementation varied across project locations.

#### ***6. Mental Health and Counseling***

The prolonged uncertainty, fear of infection, and isolation associated with the pandemic had significant psychological effects on employees. Recognizing this, HR departments initiated mental health support mechanisms such as tele-counseling services, stress management webinars, and employee assistance programs. Supervisors were encouraged to adopt empathetic leadership practices and maintain regular contact with team members. However, awareness and utilization of counseling services remained limited due to social stigma and lack of familiarity with mental health support systems. The pandemic highlighted the importance of integrating psychological well-being into mainstream HR policies in PSUs.

### ***7. Communication and Grievance Redressal***

Effective communication was essential for managing uncertainty and ensuring policy compliance during the pandemic. HR used digital platforms, emails, virtual meetings, and internal portals to disseminate safety guidelines, duty schedules, and welfare measures. Regular communication helped reduce anxiety and improve trust in management decisions. Grievance redressal mechanisms were also adapted to online modes, allowing employees to raise concerns related to health risks, leave, and compensation. Despite these efforts, contract workers often faced barriers in accessing grievance platforms, indicating the need for more inclusive and transparent communication systems across all categories of employees.

### **Policy Implications**

The findings of the study underline the urgent need for developing crisis-responsive HR frameworks tailored to the institutional realities of Public Sector Undertakings (PSUs). Traditional HR policies in PSUs are largely designed for stable operating environments and often lack flexibility during emergencies. Therefore, standardized crisis management protocols should be incorporated into HR policy manuals, including contingency staffing plans, emergency leave provisions, alternative work arrangements, and rapid decision-making mechanisms. Such frameworks would enable PSUs to respond promptly to future disruptions while maintaining essential services and protecting employee interests.

Digital capacity building within HR departments is another critical policy priority. The pandemic exposed gaps in digital readiness, particularly in areas such as online training, virtual performance monitoring, and digital grievance redressal. Investment in integrated e-HR systems, cloud-based learning platforms, and secure communication tools should be institutionalized rather than treated as temporary solutions. Equally important is continuous digital skill training for HR professionals and employees to ensure effective utilization of these technologies. Strengthening digital HR infrastructure can improve efficiency, transparency, and accessibility of HR services even beyond crisis periods.

Institutionalizing health and mental-wellness systems is essential for long-term workforce sustainability. While physical safety protocols received immediate attention during COVID-19, psychological well-being often remained under-addressed. PSUs should establish permanent employee assistance programs, on-site or virtual counseling services, and mental health awareness initiatives as part of routine HR policy. Integrating occupational health, preventive care, and stress management into regular welfare programs can enhance employee

resilience and productivity. Special attention should also be given to contract and outsourced workers, who are often excluded from formal welfare mechanisms.

The closer integration of HR functions with organizational disaster management planning is necessary. Disaster preparedness in PSUs has traditionally focused on technical and operational risks, with limited emphasis on human resource dimensions. HR should be actively involved in organizational risk assessment, emergency drills, communication strategies, and recovery planning. Creating cross-functional crisis response teams that include HR representatives can improve coordination between technical operations and workforce management. Such integration would ensure that human capital considerations are systematically incorporated into institutional resilience strategies, enabling PSUs to respond more effectively to future public health, environmental, or industrial crises.

## CONCLUSION

The COVID-19 pandemic served as a critical stress test for organizational systems and highlighted the central role of Human Resource Management in sustaining operations during large-scale disruptions. This study, focusing on NTPC as a representative Public Sector Undertaking, demonstrates that HR practices underwent significant transformation in response to unprecedented operational and social challenges. The rapid adoption of digital tools for training, communication, and administrative functions reflects an important shift toward technology-enabled HR systems, while enhanced health and safety protocols underscored the growing emphasis on employee welfare as a strategic priority.

At the same time, the findings reveal persistent challenges related to performance management, work-life balance, and equitable treatment of contract and outsourced workers. The crisis exposed structural limitations within traditional PSU HR frameworks, particularly in terms of flexibility, psychological support mechanisms, and digital preparedness. These gaps highlight the need for institutional reforms that move beyond short-term emergency responses toward sustainable, crisis-resilient HR models. Overall, the study emphasizes that effective HR management is not merely supportive but foundational to organizational resilience, especially in essential service sectors such as power generation. By integrating crisis preparedness, digital capacity, and comprehensive employee well-being into mainstream HR policy, PSUs can enhance their ability to manage future disruptions while maintaining productivity and workforce morale. The lessons from NTPC's pandemic experience thus offer valuable insights for strengthening public sector workforce governance in an increasingly uncertain global environment.

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