

REDEFINING THE ROLE OF HUMAN RESOURCE MANAGEMENT IN INDIAN COAL MINING INDUSTRY

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Abstract:

The role of Human Resource Management (HRM) in the Indian coal mining industry has evolved significantly in recent years, driven by technological advancements, regulatory changes, and increasing demands for sustainability. Traditionally, HRM in this sector focused primarily on recruitment, training, and labour management. However, with the industry facing challenges such as workforce safety, environmental sustainability, and skill gaps, the role of HRM has expanded to encompass strategic responsibilities. This paper explores the redefined function of HRM in the Indian coal mining sector, emphasizing the need for HR professionals to contribute not only to operational efficiency but also to the industry's broader goals. HRM is now tasked with fostering a culture of safety, improving employee welfare, implementing workforce modernization, and aligning human capital strategies with corporate sustainability objectives. Additionally, the increasing adoption of automation and digitization has led to a demand for a more skilled workforce, prompting HR to focus on continuous learning and skill development programs. The research highlights the critical need for HR to adapt to changing labour dynamics, improve worker engagement, and support innovation while maintaining a strong focus on regulatory compliance. Ultimately, HR's evolving role is integral to the long-term success and growth of the Indian coal mining industry, ensuring a balance between productivity and social responsibility.

Keywords: Human resources, mining, goals, skill development, welfare.

Introduction:

The Indian coal mining industry has long been a cornerstone of the nation's economic development. As the largest producer of coal globally, India depends heavily on this sector to meet its energy needs, fuel industrial growth, and provide employment. However, the sector faces numerous challenges, including increasing demands for sustainability, safety, environmental responsibility, and workforce modernization. To meet these challenges, Human Resource Management (HRM) in the Indian coal mining industry must undergo a fundamental transformation, shifting from traditional administrative functions to a more strategic role that aligns with the evolving needs of the industry.

In the year 2000, advanced economies were responsible for 48 percent of the global coal consumption, whereas China and India collectively accounted for 35 percent. The transition from coal to natural gas commenced in the European Union during the 1980s and in the United States in the 2000s. Since the onset of the 2000s, there has been a notable increase in coal demand across Asia, particularly in India

and China. The International Energy Agency (IEA) projects that by 2026, China and India will contribute to over 70 percent of the worldwide coal consumption. India aims to elevate its coal production to 1 billion tonnes by the year 2030. The demand for coal in India is anticipated to rise to between 1,192 and 1,325 million tonnes by 2030. In 2022, India's coal consumption represented 14 percent of the global demand, positioning it second only to China, which accounted for 54 percent. The IEA predicted that China's coal demand would reach its zenith in 2023, while Sinopec, a state-owned Chinese oil enterprise, projected a peak in 2025. The Ministry of Coal (MoC) of the Government of India forecasts that the coal demand in India will peak between 2030 and 2035. The growth rate of coal production is exhibiting signs of decline. Should this trend persist, India may reach its peak coal production in the early 2030s, as previously forecasted.

Coal India Limited (CIL), a Maharatna Company and the heavyweight champion in coal production, carries the monumental task of fuelling the Nation and driving the economic engine of the Country. CIL set its sights on a jaw-dropping target: hitting one billion tonnes of coal production by the year 2019-2020, all to power India's energy aspirations. This ambitious leap from the then output of around 500 million tonnes was no walk in the park.

To reach this epic milestone, CIL focused on amping up production at existing mines, rolling out aggressive plans to launch new ones, diving headfirst into modernization and tech adoption, and rallying high stakeholder engagement. In this high-stakes game, the HR team at CIL became a pivotal player, as people-driven processes are the secret sauce to success.

The workforce needed to bring their A-game, showcasing unmatched skills in project management, contract wrangling, risk navigation, land acquisition, and more. At the same time, management had to craft a workplace that's inspiring, empowering, and downright motivating, building a culture rooted in trust and fulfilment. It started as a thrilling journey, and everyone had a role to play.

By FY 2029–2030, the Ministry of Coal wants to open 100 new mines with a 500 million ton per annum (MTPA) coal production capacity. A committee established inside the coal ministry recommends policy measures required to advance "Make in India/Atmanirbhar Bharat." A revenue-sharing mechanism is being used to reopen closed or abandoned mines, increasing the nation's coal output. To decrease coal imports and boost coal supply to the steel industry, the government intends to establish coal washeries. To boost coal production, Coal India Limited (CIL) has taken a variety of actions. Where possible, CIL is implementing Mass Production Technologies (MPT) in its Underground (UG) mines, primarily with Continuous Miners (CMs).

Due to the availability of abandoned or discontinued mines, CIL has also planned Highwalls (HW) mines. Where possible, CIL is also planning large capacity UG mines. CIL already possesses state-of-the-art equipment in its high-capacity surface miners, dumpers, and excavators for its opencast (OC) mines. Singareni Collieries Company Limited (SCCL) conducts regular liaison in order to establish new projects and run current ones. SCCL has taken steps to build coal evacuation infrastructure, such as pre-weigh bins, mobile crushers, CHPs, and crushers.

Together with others, the HR department had to fulfil five people imperatives in order to accomplish the company's strategic thrust areas. These include making sure that the right kind of talent (defined in terms of particular technical and behavioural competencies) is available at the right time, place, and cost; developing a high-performing workforce; cultivating value-based leadership at all organizational

levels; producing motivated and engaged staff; and establishing a culture of ongoing learning, effective operations, social consciousness, and stakeholder responsiveness.

Objective of the Study:

This article examines how the role of HRM in the Indian coal mining industry is being redefined, considering technological advancements, changing workforce dynamics, regulatory frameworks, and the growing focus on sustainability and safety. Drawing on recent research, industry reports, and expert opinions, this article highlights the key transformations in HRM practices and their implications for the industry's future.

Methodology:

The present study uses research papers and data which are secondary and are taken from reputable databases and publications, including SAGE journals, SCOPUS, ResearchGate, Academia etc. Other secondary data are taken from the website of Coal India and other institutions. Therefore, it is case study i.e. descriptive research which also includes an analysis of the changes introduced in the organisation.

Literature Review

The pandemic slowed the growth of coal production to 0.3 percent annually in 2019–20. Coal production fell by an average of 2 percent per year during the peak pandemic year of 2020–21. Growth in coal production has resumed during 2021–2022. Coal production rose 8.6 percent in 2021–2022 and 14.8 percent in 2022–2023. By 2023–2024, Coal India Limited (CIL) is expected to generate 1 BT of coal, according to a 2019 announcement by the coal minister. The goal has not yet been met. On the other hand, domestic coal production increased significantly more quickly in the ten years before the policy change than it did after. As was previously mentioned, this is especially true when it comes to private sector production. The need for coal is declining because of the move to renewable energy. If that's the case, then the energy transition is moving along slowly but steadily, and India might be on track to meet the 2030s peak coal target.

Adopting a strategic perspective on their work and seeing the crucial connections between organizational strategy and HR strategy has been a significant trend in recent years for HR managers (Barney, 1991; Sims, 2002). As a result, as Delery & Doty (1996) point out, the field of human resource management has changed over the past several years from a micro-focus on specific HR practices to a discussion of how HRM as a more comprehensive management strategy may help the firm gain a competitive edge.

In order to gain a competitive edge, a resource needs to be (1) profitable for the company, (2) relatively rare among its present and prospective rivals, (3) imperfectly imitable, and (4) non-substitutable, according to Barney (1991). Therefore, the primary attributes of human resources that contribute to competitive advantage are value, uniqueness (firm-specificity), and inimitability. According to Barney (1991), value refers to the workforce itself, where workers with a variety of skills may perform a variety of activities and "allow a firm to conceive of or implement strategies that improve its efficiency and effectiveness." Stated differently, a staff with a wide range of knowledge and abilities is more beneficial to a company than one with a limited set of qualifications.

It is easier to elicit and reward the kinds of behaviour required to accomplish an organization's plan when top management's objectives and HRM practices are more closely aligned. HRM personnel should create HR procedures that prioritize quality in order to support this competitive strategy, as noted by Bratton & Gold (2003), if a firm want to establish a reputation for producing high-quality goods. In other words, predicting HR demands and creating programs to guarantee that the appropriate kinds and quantities of people are accessible at the appropriate time and location should be part of the HRM planning process. (Steen, 2009; Guest, 1987; Bratton & Gold, 2003). Therefore, it is imperative that the nation's mining businesses maintain alignment between their HR strategic plans and the broader organizational initiatives.

The Global Coal Mine Tracker is a database of the remaining operational time of coal mines based on current leases, permits, available reserves, and other economic considerations, also known as the "life of mine" (LOM). It is maintained by Global Energy Monitor (GEM), a non-governmental organization that supports the global movement for clean energy transition. By 2050, Coal India Limited (CIL) will need to eliminate 73,800 jobs, according to its reports. 337,400 individuals are currently employed by CIL; however, this number excludes informal laborers in India's coal mining industry. According to another estimate, 20 thermal plants with a combined capacity of 27.4 gigatonnes are presently under construction and are probably going to be added to the nation's capacity by the end of 2027–2028.

The Traditional Role of HRM in Indian Coal Mining

Historically, HRM in the Indian coal mining sector was largely administrative, focusing on recruitment, compensation management, employee welfare, and compliance with labour laws. The mining industry, by nature, was labour-intensive, with a strong focus on managing large, unskilled workforces. HRM in coal mining centres on operational efficiency, ensuring that workers meet the demands of physically taxing work in sometimes hazardous environments.

In these traditional roles, HRM's primary responsibilities included:

- 1. Labor Management:** Given the large workforce, HR departments were tasked with hiring, training, and managing manual labourers. Labor-intensive jobs characterized the workforce, with minimal emphasis on skill development.
- 2. Safety and Health Compliance:** Mining is a high-risk industry, and HRM played a critical role in ensuring compliance with safety protocols, managing injuries, and promoting worker well-being.
- 3. Regulatory Compliance:** HR ensured that the workforce was compliant with labour laws and other regulations governing working conditions, wages, and social security.

However, as the industry has evolved, HRM's role has transformed. To remain competitive and resilient, HR professionals are increasingly expected to address broader challenges such as skill gaps, workforce modernization, innovation, and sustainability.

Factors Driving the Redefinition of HRM in the Coal Mining Sector

Several key factors have contributed to the redefinition of HRM in the Indian coal mining industry:

- 1. Technological Advancements and Automation:** Automation and digital technologies are rapidly reshaping the coal mining industry. The introduction of advanced machinery, robotics, and AI-driven systems has increased productivity but also reduced the need for traditional labour. This shift has led to a demand for highly skilled employees capable of operating and maintaining complex technologies.

According to a study by the International Labour Organization (ILO), automation is expected to displace low-skill jobs while creating a demand for workers with specialized training. This presents a challenge for HR departments in ensuring that workers are retrained and upskilled to meet the needs of a modernized mining industry.

2. Regulatory Changes and Sustainability Focus: The Indian government has increasingly focused on sustainable mining practices, stricter environmental regulations, and greater social responsibility. HRM is now tasked with ensuring that the workforce is equipped to comply with environmental laws and sustainability standards, which may require new skill sets and practices.

3. Workforce Demographics and Skill Gaps: The coal mining workforce is aging, and there is a growing need to attract younger, more skilled workers. The industry faces a skill gap, as many traditional coal mining jobs require less technical expertise, while modern technologies demand highly skilled professionals. HRM must address this gap by developing strategies for talent acquisition, retention, and skill development.

The Skill Council for Mining Sector (SCMS) brought in Deloitte Touché Tohmatsu India LLP to dive into the workforce and skill needs for India's mining sector from 2014 to 2022. What did they find? Well, for starters, coal mining in India is struggling with low productivity. Picture this: an Indian miner produces between 150 and 2,650 tonnes per year, while their U.S. counterparts average around 12,000 tonnes! But here's the silver lining—there's a shift towards adopting bigger and better machinery, which means more jobs for machinery operators and a potential boost in productivity.

The study also highlighted a curious paradox. Despite a large pool of workers skilled in Geophysical Exploration and Mechanical/Electrical Services, the mining sector isn't drawing them in. Meanwhile, for occupations like Surveying and Geological Investigation, mining is in a tug-of-war with industries like manufacturing and construction, all vying for the same talent. This fierce competition is stretching the labour pool thin, both from other sectors and within mining itself, as companies scramble to secure the best human resources.

4. Health and Safety Concerns: The coal mining industry remains one of the most hazardous sectors in terms of worker injuries and fatalities. Despite advances in safety technologies, the human element remains critical. HR professionals are now tasked with creating a culture of safety, enhancing training programs, and fostering an environment of worker empowerment and engagement to ensure a zero-harm approach.

5. Corporate Social Responsibility (CSR) and Community Engagement: Increasingly, coal mining companies are held accountable not just for their economic performance but also for their social impact. HRM must therefore align the workforce with the company's CSR goals and engage with local communities to ensure mutual benefits.

Redefining HRM: Key Areas of Transformation

As the coal mining industry continues to evolve, so too must HRM practices. The following sections outline key areas where HRM is undergoing significant transformation in response to the changing demands of the industry.

1. Strategic Workforce Planning

Strategic workforce planning has become one of the most important functions of HRM in the coal mining sector. In light of technological changes and automation, HR professionals must proactively anticipate future workforce needs. This involves analysing the skills required in the future, forecasting workforce shortages, and developing strategies to bridge the skill gaps.

HRM now plays a crucial role in talent mapping, succession planning, and creating an agile workforce that can adapt to industry changes. This may involve collaborating with educational institutions to ensure that future workers are trained in the skills that will be needed in a tech-enabled mining environment.

2. Training and Skill Development

With the advent of automation and digital tools, HRM is increasingly focused on upskilling and reskilling the workforce. According to a 2023 report by the World Economic Forum, the mining industry is expected to see a surge in demand for skills related to machine learning, data analysis, and advanced equipment operation.

To meet these needs, HRM is partnering with external training providers and internal departments to offer comprehensive training programs. These initiatives focus not only on technical skills but also on soft skills like leadership, communication, and adaptability, which are critical in an increasingly digital work environment.

3. Employee Health and Safety

Given the high-risk nature of coal mining, HRM's role in safety has always been a central focus. However, the scope of this responsibility has expanded to include a broader safety culture, which goes beyond merely complying with safety regulations to actively engaging employees in safety decision-making.

In recent years, companies such as Coal India Limited have invested heavily in safety technology, including wearable devices that track vital signs, detect hazardous gas levels, and alert workers to potential dangers. HRM is now responsible for integrating these technologies into the company's safety protocols and ensuring that workers are trained in using these devices.

Additionally, HR departments are increasingly engaged in promoting mental health and wellness programs for workers. The physical and mental strain of working in the mining industry requires HRM to ensure a holistic approach to employee well-being.

4. Diversity, Equity, and Inclusion (DEI)

As the coal mining industry diversifies its workforce to attract a broader talent pool, HRM is working to promote diversity, equity, and inclusion. This includes creating a more inclusive work environment for women, addressing gender disparities, and fostering a culture that values the contributions of all employees.

In 2022, the Government of India introduced policies encouraging more women to enter the workforce in traditionally male-dominated industries like mining. HRM plays a key role in implementing these policies, including creating mentoring programs, offering flexible work arrangements, and ensuring equal opportunities for advancement.

5. Technology Integration in HR Practices

The increasing reliance on technology in the coal mining industry has also transformed HRM practices. HR departments now use advanced HR software, artificial intelligence (AI), and data analytics to streamline recruitment, onboarding, performance management, and employee engagement.

For example, AI-based tools are being used for talent acquisition to analyse resumes, predict candidate suitability, and improve the hiring process's efficiency. Similarly, HR analytics helps track employee performance, identify high-potential workers, and optimize workforce deployment.

6. Labor Relations and Union Engagement

In the Indian coal mining industry, labour unions have traditionally played a significant role. HRM must balance maintaining harmonious labour relations while also adapting to the industry's evolving needs. The growing influence of technology and automation in the workplace has led to increased tension between workers and management, particularly over job displacement and the need for reskilling.

HRM is tasked with negotiating labour agreements that balance the interests of the workforce with the need for technological advancements. This includes fostering open communication channels, negotiating retraining initiatives, and ensuring that employees are supported throughout the transition process.

7. Corporate Social Responsibility (CSR) and Community Engagement

HRM is also tasked with aligning the workforce with the company's CSR goals. Mining companies in India are increasingly focusing on the impact they have on local communities, particularly in terms of environmental sustainability and social development. HRM has a role in integrating these values into the workplace culture by promoting employee participation in community outreach programs and sustainability initiatives.

For instance, companies like Adani Mining and Tata Steel have introduced CSR programs that involve local workers in projects aimed at environmental rehabilitation, education, and healthcare. HRM supports these initiatives by organizing volunteer programs, facilitating skill development for local communities, and ensuring that employees are aware of the company's broader social goals.

Impact of the initiatives on organisational performance

In the current fiscal year (through September 12), the nation's coal output increased 5.85% to 411.62 million tonnes (MT) compared to the same period last year. 388.86 MT of coal were produced in this nation during the same time previous year. State-owned Coal India Ltd. increased its output to 311 MT during the same time period, a 2.80% increase over the 302.53 MT produced during the same period the year before. Additionally, there has been a significant increase in coal dispatch, which reached 442.24 MT in 2024–25 (up to September 12), up from 421.29 MT in the same period the previous year. This is a strong growth rate of 4.97 percent.

Additionally, the amount of coal sent to power plants increased by 4.03 percent to 362.65 MT, demonstrating the industry's dedication to supplying the country's growing energy needs. The coal stock owned by coal businesses jumped to 76.49 MT as of September 13, 2024, indicating an annual growth rate of 49.07 percent. At the same time, domestic coal-based thermal power plants have increased their coal stock by 43.68 percent to 36.58 MT.

Conclusion

The role of HRM in the Indian coal mining industry is undergoing a fundamental transformation, driven by technological advancements, regulatory changes, and shifting workforce dynamics. As the industry embraces automation, sustainability, and greater worker welfare, HR professionals must adapt to meet the evolving needs of the sector. By focusing on strategic workforce planning, skill development, employee safety, and diversity, HRM can help shape the future of the industry and ensure its long-term success.

Ultimately, HRM's redefined role in the coal mining industry extends far beyond administrative functions. It is now a strategic partner that contributes to the industry's sustainability, innovation, and human capital development. By embracing these changes, HR professionals can play a pivotal role in shaping the future of coal mining in India, ensuring a safer, more sustainable, and more inclusive workforce for generations to come.

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