

Toward Harmonious Labor Relations in Vietnam's Coal Industry: An Integrated Qualitative and Sem-Based Study

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Abstract: This paper examines the current state of labor relations (LR) in Vietnam's coal industry through a systems-based approach, employing both qualitative and quantitative research methods. The findings indicate that material factors-such as wage policies, employee benefits, and working conditions-play a critical role in maintaining LR stability. Meanwhile, non-material factors-including workplace dialogue mechanisms, information exchange, and the representative role of trade unions-significantly influence employee engagement and perceptions of fairness. The Structural Equation Modeling (SEM) analysis reveals that welfare policies have the strongest impact on LR quality ($\beta = 0.42$), followed by the role of trade unions ($\beta = 0.31$) and communication mechanisms ($\beta = 0.29$). The study contributes to labor relations theory in the context of heavy industry and proposes a practical reference model applicable to sectors with similar worki.

Keywords: Labor relations, trade unions, coal industry, employee welfare, communication, SEM model.

1. INTRODUCTION

Labor relations (LR) constitute a crucial pillar in ensuring the stability and sustainable development of enterprises, particularly in heavy industries such as the coal sector-where harsh working conditions, physically demanding manual labor, and constant occupational safety risks prevail. In this context, LR within Vietnam's coal enterprises not only reflect the relationship between employees and employers but also serve as an indicator of the extent to which interests are harmonized and corporate culture is developed.

In practice, numerous coal enterprises in Vietnam are facing persistent challenges in collective bargaining processes, information exchange mechanisms, and working conditions. A lack of transparency, formalistic workplace dialogues, and mounting pressures related to productivity and occupational safety have emerged as significant barriers to fostering a stable and progressive working environment. Furthermore, comprehensive empirical research on labor relations in the coal industry remains limited and insufficient to meet the demands of policy-making and the specific human resource management needs of the sector.

In response to these challenges, this paper aims to assess the current status of labor relations in coal enterprises, identify key factors affecting LR quality, and propose solutions to promote harmonious, stable, and progressive labor relations. The study focuses on workers, employers, and trade union representatives from enterprises under the Vietnam National Coal and Mineral Industries Group (VINACOMIN), including affiliated units such as coal processing, screening, and transportation companies operating in Quang Ninh, Thai Nguyen, and other provinces. This study contributes to the labor relations literature by offering an empirical validation of a multi-dimensional model within Vietnam's heavy industry context, supported by both qualitative insights and SEM-based quantitative findings.

A mixed-methods research approach was employed, combining both qualitative and quantitative techniques, including document analysis, expert interviews, questionnaire surveys, and statistical data processing using SPSS and AMOS software. The findings contribute not only to providing empirical evidence on the current labor relations landscape in the coal industry but also to offering theoretically grounded and practically feasible policy recommendations. These are particularly relevant in the context of digital transformation and deep international integration.

2. THEORETICAL FRAMEWORK

Labor relations (LR) are understood as the totality of relationships that arise in the process of employment and labor utilization between employees, employers, and their representative organizations, under the regulation of legal and social institutions. According to the International Labour Organization (ILO, 2015), labor relations are a foundation for safeguarding workers' rights, maintaining social stability, and promoting sustainable economic development. Among the primary goals of modern human resource management is the establishment of harmonious, stable, and progressive labor relations (Budd & Bhave, 2008).

2.1. Key Components of Labor Relations

According to Dunlop's classic tripartite model (1958), labor relations involve three core actors: (1) employees and their representative organizations; (2) employers and their associations; and (3) the state, which plays the role of establishing and monitoring the legal framework. The fundamental elements of labor relations include labor contracts, collective bargaining, workplace dialogue, labor dispute resolution, and employee welfare systems (Kaufman, 2004).

In the mining sector-particularly in the coal industry-labor relations tend to be more complex due to hazardous working conditions, a high level of organizational structuring, and heavy reliance on occupational safety. In this context, the role of grassroots trade unions becomes especially vital in ensuring a balanced distribution of rights and responsibilities among stakeholders (Zheng & Lamond, 2009).

2.2. Factors Influencing Labor Relations

Walton and McKersie (1965) categorized the factors affecting labor relations into three groups: (i) *Individual factors*, such as the qualifications, competencies, and attitudes of both workers and employers;

(ii) *Organizational factors*, including leadership style, human resource policies, and the role of trade unions; and

(iii) *External environmental factors*, such as legal frameworks, socio-cultural norms, and technological developments.

In heavy industries such as coal mining, key influencing factors include working conditions (safety and exposure to hazardous environments), income levels, welfare regimes, and communication mechanisms between workers and management (Nguyen & Le, 2021; World Bank, 2020).

2.3. Approaches to Labor Relations

Current theoretical approaches to labor relations include:

- The industrial relations approach, which emphasizes the role of unions and collective bargaining;
- The human relations approach, which focuses on employee motivation and needs; and
- The systems approach, which views labor relations as a system influenced by environmental, cultural, and technological factors (Kaufman, 2004; Budd, 2004).

Notably, in applied research in Vietnam, the systems approach proves to be particularly relevant, as it captures the multilayered nature of labor relations-including the impact of state policy, enterprises, trade unions, workers, and contextual elements such as local governance and industry-specific characteristics (Pham & Nguyen, 2022).

2.4. Research Gaps

While there has been a growing body of literature on labor relations in Vietnam, in-depth and empirical research specific to certain sectors-such as coal mining, where workers face hazardous and demanding conditions-remains limited. Previous studies have mostly focused on descriptive analyses and often fail to fully examine the role of workplace dialogue mechanisms and grassroots trade unions in fostering a stable labor environment (Tran & Le, 2019; Dang, 2020).

This study therefore aims to address this empirical gap by focusing on labor relations in the coal industry. It seeks not only to provide a sector-specific and evidence-based analysis but also to propose practical policy implications for the promotion of harmonious, stable, and progressive labor relations.

3. RESEARCH METHODOLOGY

To ensure a comprehensive and reliable analysis of labor relations (LR) in coal enterprises, this study adopts a mixed-methods approach, combining both qualitative and quantitative research methods. This approach enables an in-depth exploration of contextual and experiential aspects through semi-structured interviews while also quantifying the influence of key factors on LR quality through large-scale surveys and advanced statistical analysis.

3.1. Qualitative Method

The qualitative phase involved 15 in-depth interviews with enterprise managers, grassroots trade union representatives, and labor relations experts from units affiliated with the Vietnam National Coal and Mineral Industries Group (VINACOMIN). The interviews focused on eliciting perspectives and practical experiences related to working conditions, the effectiveness of collective bargaining, the substantive role of trade unions, and workplace dialogue and communication mechanisms.

The data collected were analyzed using content analysis, allowing the identification of core themes that formed the basis for the subsequent quantitative research.

3.2. Quantitative Method

Based on the insights from the qualitative phase, a structured survey questionnaire was developed, comprising 32 items grouped into key variable categories: working conditions, wages and benefits, labor - employer relations, trade union roles, and overall satisfaction with labor relations. A **5-point** Likert scale was employed to measure respondents' perceptions of observed variables.

The survey was conducted at six coal enterprises (including mining, processing, and transportation units), with a total of 475 questionnaires distributed and 447 valid responses collected, yielding a response rate of 94.1%. The sample ensured representativeness in terms of geographic location (e.g., Quang Ninh, Thai Nguyen), enterprise types, gender, age, and work tenure of employees.

3.3. Data Analysis

Collected data were processed and analyzed using a sequence of modern statistical techniques. First, the reliability of measurement scales was assessed via Cronbach's Alpha, ensuring strong internal consistency within variable groups. Next, both Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were employed to validate factor structures and assess convergent and discriminant validity. Finally, Structural Equation Modeling (SEM) was applied to measure the influence of individual factors on the quality of labor relations and to test the proposed theoretical model. All quantitative data analysis was conducted using SPSS version 26.0 and AMOS version 24.0.

4. RESULTS AND DISCUSSION

4.1. Qualitative Findings

The analysis of data from 15 in-depth interviews with managers, trade union representatives, and workers from coal enterprises under the Vietnam National Coal and Mineral Industries Group (VINACOMIN) revealed three main thematic groups that influence the quality of labor relations (LR).

First, the harsh and hazardous working environment-including dark, humid underground mine shafts, low safety levels, and a high risk of occupational accidents-exerts significant psychological pressure on workers. Many respondents expressed feeling "constantly stressed" and reported a lack of motivation to remain with their companies unless working conditions were improved (ILO, 2019; Nguyen & Le, 2021). Second, communication mechanisms between employers and employees remain largely formalistic, typically limited to annual labor conferences or administrative notices. Modern internal communication channels such as digital bulletin boards, email, and internal social networks have not been effectively implemented, resulting in delayed, one-way, and non-transparent communication. This weakens workplace dialogue-an essential component of modern labor relations management (Budd & Bhawe, 2008). Third, grassroots trade unions are recognized for their role in protecting workers' rights, but they often lack independence in collective bargaining processes. Several respondents noted that union officials often hold dual roles as enterprise staff, creating a conflict of interest akin to "refereeing while playing," thereby undermining employee trust in the union's representative function (Tran & Le, 2019; Pham & Nguyen, 2022).

4.2. Quantitative Findings

Quantitative data collected from 447 valid questionnaires at six coal enterprises were processed and analyzed using SPSS 26.0 and AMOS 24.0. To ensure the reliability of measurement scales, Cronbach’s Alpha was used. All variable groups achieved alpha coefficients greater than 0.7, indicating high internal consistency and suitability for further factor analysis (Hair et al., 2010).

Exploratory Factor Analysis (EFA) identified five key factors influencing labor relations quality:

1. Working conditions
2. Wage and welfare policies
3. Communication mechanisms
4. Trade union role
5. Employee organizational commitment

These factors demonstrate the intertwined effects of both material and intangible elements in shaping harmonious labor relations.

Subsequently, Confirmatory Factor Analysis (CFA) was conducted to validate the measurement model. The fit indices met the recommended thresholds: CFI > 0.90, GFI > 0.90, and RMSEA < 0.08, indicating a good model fit (Kline, 2016). This confirms the statistical validity of the identified factor structure and its relevance to real-world labor relations in the coal industry.

To assess the degree of influence each factor has on LR quality, Structural Equation Modeling (SEM) was employed. The results showed that wage and welfare policies had the strongest impact on labor relations, with a standardized coefficient of $\beta = 0.42$ ($p < 0.001$). This underscores the foundational role of economic incentives in maintaining stability and harmony between labor and management, especially in physically demanding sectors like coal mining (Kaufman, 2004; ILO, 2019).

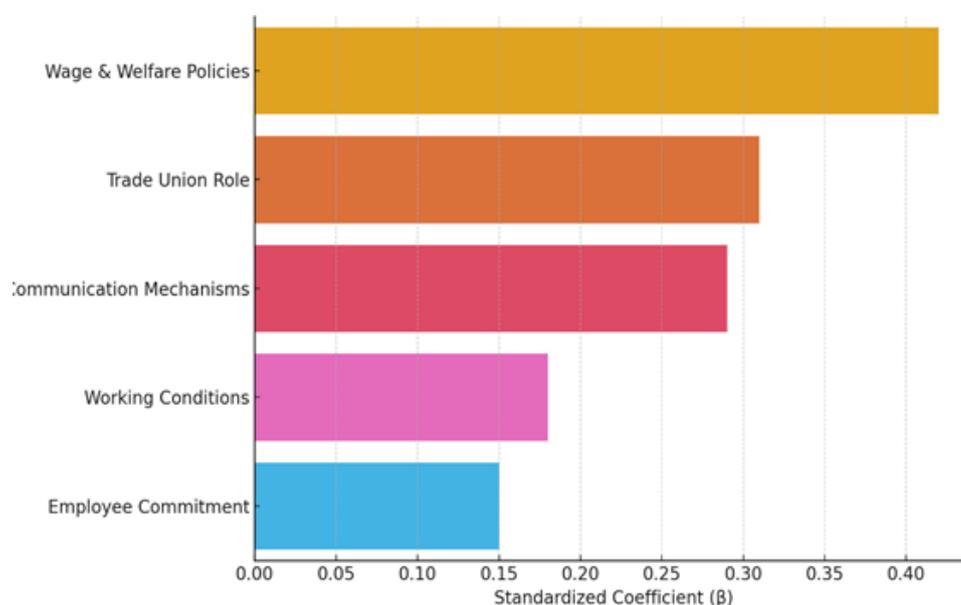


Figure 1. Standardized effects of factors on labor relations quality (SEM Model)

The role of trade unions emerged as another significant factor ($\beta = 0.31$, $p < 0.01$), reflecting their intermediary and representative function in conveying workers’ concerns and supporting collective bargaining. This aligns with the ILO’s concept of social dialogue, in which trade unions serve as a core institution for balancing interests between employees and employers (ILO, 2013).

Table 1. Model fit indices summary

Fit Index	Threshold	Model Value
CFI	> 0.90	0.93
GFI	> 0.90	0.91
RMSEA	< 0.08	0.07

The communication mechanism was also a major determinant ($\beta = 0.29$, $p < 0.01$), highlighting the importance of transparency and two-way connectivity within the organization. Enterprises with effective internal communication systems were associated with higher employee satisfaction and smoother processes for dialogue, bargaining, and dispute resolution (Budd & Bhawe, 2008; Pham & Nguyen, 2022).

In addition, two factors had moderate yet statistically significant effects: working conditions ($\beta = 0.18$, $p < 0.05$) and employee commitment ($\beta = 0.15$, $p < 0.05$). Despite their relatively lower coefficients, these factors play vital roles in fostering work motivation and employee loyalty. These findings reaffirm that labor relations are not merely transactional exchanges of economic benefits but are also sustained social processes shaped by organizational culture and institutional trust (Macey & Schneider, 2008).

Overall, the quantitative findings not only support the qualitative results but also offer a robust empirical foundation for coal enterprises to design comprehensive strategies to enhance labor relations. Such efforts are essential for achieving sustainable and stable development, particularly in the context of digital transformation and increasing global integration.

4.3. Discussion

The quantitative findings reinforce and expand upon the qualitative insights, demonstrating that a harmonious, stable, and progressive labor relations (LR) system in coal enterprises cannot rely solely on material foundations such as wages, benefits, or working conditions. Instead, it must be comprehensively designed to incorporate non-material elements - including information transparency, the effectiveness of dialogue mechanisms, and the substantive representativeness of trade unions.

These factors do not operate in isolation but are closely interrelated, jointly shaping workers' perceptions, motivation, and behavior-especially in the coal mining sector, which is characterized by harsh working conditions, high risks, and strict demands for discipline and coordination. The research model proposed in this study may therefore serve as a valuable reference framework not only for the coal industry but also for other heavy industries with similar characteristics (Kaufman, 2004; ILO, 2019).

In particular, the notable impact of non-material factors, such as communication mechanisms and trade union roles, underscores the growing importance of two-way communication channels, genuine collective bargaining processes, and meaningful worker participation in enterprise decision-making. This aligns with the sustainable labor relations framework developed by Budd and Bhawe (2008), which emphasizes a balance between economic interests and workers' socio-psychological needs as the foundation for progressive and effective labor relations.

Additionally, the findings reveal that employee commitment serves as a mediating factor, indirectly but significantly influencing the quality of labor relations. This suggests a modern human resource management approach, where building a corporate culture grounded in trust, transparency, participatory governance, and long-term engagement becomes a critical factor in stabilizing labor relations (Macey & Schneider, 2008; Pham & Nguyen, 2022).

Amid increasing pressures from digital transformation, labor restructuring, and sustainable development demands, improving labor relations must be integrated into long-term strategic planning. This entails enhancing trade union capacity, institutionalizing workplace dialogue mechanisms, and expanding workers' voice and autonomy in organizational processes. As such, the findings of this study contribute not only theoretically-by establishing a multi-dimensional structure of labor relations tailored to the mining context-but also practically, by offering valuable implications for policymakers and enterprise managers seeking to foster fair, stable, and efficient working environments (Tran & Le, 2019; World Bank, 2020).

5. CONCLUSION AND RECOMMENDATIONS

5.1. CONCLUSION

This study has provided a comprehensive assessment of labor relations (LR) in Vietnam's coal industry-an industrial sector characterized by physically demanding work, hazardous environments, and complex production systems. By employing a mixed-methods approach, the research demonstrates that labor relations in coal enterprises are shaped by both material factors (working conditions, wages, and

welfare) and non-material factors (communication mechanisms, trade union roles, and employee engagement).

Among these, wage and welfare policies were found to have the strongest impact on LR quality ($\beta = 0.42$), followed by the role of trade unions ($\beta = 0.31$) and communication mechanisms ($\beta = 0.29$). These elements not only address workers' basic needs and safety but are also closely linked to perceptions of fairness, trust, and representativeness in the workplace (Kaufman, 2004; Budd & Bhave, 2008; ILO, 2019). Notably, employee engagement was identified as a significant mediating factor, suggesting that cultivating an organizational culture based on trust, transparency, and meaningful participation plays a pivotal role in promoting stable and sustainable labor relations (Macey & Schneider, 2008; Pham & Nguyen, 2022). The proposed research model thus offers not only theoretical contributions but also a practical reference framework for designing labor policies in heavy industries.

5.2. Recommendations

Based on the research findings, the authors propose the following recommendations:

First, for enterprises: Wage, bonus, and welfare policies should be revised toward greater equity, transparency, and competitiveness. Additionally, investments should be made to improve working conditions in underground mining and coal processing/transportation areas, ensuring workers' health and safety-particularly in the face of increasingly extreme weather and labor conditions (Nguyen & Le, 2021; ILO, 2019).

Second, two-way communication channels between employers and employees should be enhanced through digital platforms, internal networks, and regular dialogue forums. These improvements not only increase transparency but also help prevent conflicts and improve the effectiveness of collective bargaining (Budd & Bhave, 2008; Tran & Le, 2019).

Third, the independence and substantive representativeness of grassroots trade unions must be strengthened. This includes clearly separating the roles of union officers and enterprise managers, while building union capacity in negotiation, dialogue, and labor policy monitoring (Zheng & Lamond, 2009; Pham & Nguyen, 2022).

Fourth, state management agencies should issue detailed guidelines for assessing the harmony of labor relations in the mining sector. These guidelines would serve as a basis for inspection, supervision, and support to help enterprises improve their labor environments. Simultaneously, government programs should support trade union capacity building and promote progressive organizational cultures centered on workers' well-being.

Finally, future studies should extend this research model to other heavy industries - such as metallurgy, chemicals, and construction-to verify its applicability and refine the proposed theoretical framework on labor relations.

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